THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. VIII. No. 184—11th YEAR.] LONDON, NOVEMBER 8, 1859. [Subscription per Ann. 15s. in Advance 18s Credit.] Price 8d. Unstamped.

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April 27, 1854.

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JAMES L. HAWTHORN,
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Over Darwen, Nov. 5, 1859.

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THE Undersigned hereby caution Meter Manufacturers and others against infringing the exclusive right of the Undersigned to the use of the Screw Adjustment for regulating the Height of the Overflow-Pipes in Wet Gas-Meters, as described in the Specification of the Letters Patent granted to Crosley and Goldsmith on the 19th of April, 1856; as well as against infringing any other portions of that or any other Patent of the said William Crosley; and

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Woolwich, Nov. 7, 1859.

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WANTED, by the Directors of the DUKINFIELD GAS COMPANY, near Manchester, an EXHAUSTER, capable of passing 10,000 cubic feet of Gas per hour.

Address Mr. WILLIAM DORE, at the Works.

LORD REDESDALE'S ACT.

GAS-METERS.

D. HULETT & CO.

Have always made their Meters with the Low Spouts; consequently no alteration is required.

55 and 56, HIGH HOLBORN, LONDON.

THE IMPERIAL IRON TUBE COMPANY,
(SUCCESSORS TO GEORGE B. LLOYD & CO.,)
GAS STREET AND BERKLEY STREET,
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Manufacturers of Wrought-Iron Tubes and Fittings,
FOR GAS, STEAM, AND WATER.
PATENT GLASS ENAMELLED AND GALVANIZED TUBES,
AND
LAP-WELDED IRON BOILER TUBES.

MEDALS AWARDED TO
THOMAS GLOVER'S
PATENT DRY GAS-METERS.

THOMAS GLOVER,

PATENT DRY GAS-METER MANUFACTURER,

SUFFOLK STREET, CLERKENWELL GREEN, AND
ALLEN STREET, GOSWELL STREET, E.C.
Established 1844.

LORD REDESDALE'S "SALE OF GAS BILL."

LONDON, August 15, 1859.

THOMAS GLOVER takes the earliest opportunity of intimating to Gas Companies and his other Customers that, as Lord Redesdale's "Sale of Gas Bill" has determined the unit of measurement, he is now prepared to supply his Patent Dry Gas-Meters guaranteed to meet all the legal requirements of that bill.

THOMAS GLOVER confines his sole attention to the business of Gas-Meter Making. The propriety of his doing so is satisfactorily proved by his success; and, without the practice of any quackery, or any attempt to delude the public by an absurd exhibition of "Old and New Valves," his Meters are in general use by the Metropolitan Gas and other Companies in this Country and abroad. For example, one Metropolitan Company have now in use above **12,500** of his Patent Dry Gas-Meters; some of these Meters have been fixed for Fourteen Years, and are still in working order, without complaint from either the Company or the Consumer.

THOMAS GLOVER thinks it necessary to put Gas Companies on their guard against parties selling Patent Dry Gas-Meters constructed in imitation of his, but unskilfully made on erroneous principles, and with improper and unsuitable materials.

THOMAS GLOVER'S Workshops are now the most extensive in this or any other Country, and he is thereby enabled promptly to execute orders to any extent required. Purchasers may at any time inspect his Works and the Materials of which his Meters are constructed. He is ready to enter into Contracts with Gas Companies and others to uphold their Stock of his Meters for Twenty Years at an annual charge varying from 2½ to 5 per cent., and to leave always in the hands of Gas Companies Three Years' charge for upholding, as a guarantee for the fulfilment of the Contract.

CROSLEY & GOLDSMITH'S

PATENT SELF-ADJUSTING & COMPENSATING GAS-METERS

CANNOT BE OVER OR UNDERCHARGED WITH WATER,

and they consequently register the quantity of Gas consumed with greater accuracy than Meters in which the Water-Line is variable.

MANUFACTURED BY

CROSLEY & CO.,

GAS-METER MANUFACTURERS,

103, SOUTHWARK BRIDGE ROAD, LONDON.

N.B. The Patent Self-Adjusting and Compensating Apparatus may be applied to the ordinary Meter.

Manufacturers of LOWE'S PATENT MOTIVE-POWER METER, for situations where there is an inadequacy of pressure to supply the special requirements of certain consumers in low grounds during the day or night.

Also, Manufacturers of EXPERIMENT METERS, GASHOLDERS, GOVERNORS, MINUTE-CLOCKS, PHOTOMETERS, &c. &c., similar to those used by Mr. King, of Liverpool.

C. and Co. are the only house in the trade which has for years manufactured Meters according to the standard measure set forth in the 2nd Section of the "Sale of Gas Act," and which also comply with the rules laid down in the Section for testing meters. Purchasers of C. and Co.'s Meters may therefore be secured against any additional expenses being incurred in order to adapt their Meters to the requirements of the new Act.

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ERRATUM.

At page 569, 2nd column, 22nd line, for "*till*" read "*when.*"

TO CORRESPONDENTS.

DIRECTOR.—*A commercial chaldron of coke is a very elastic measure. Its bulk varies from the legal standard of 58⅔ cubic feet to 60 cubic feet, and sometimes more; and its weight from 12½ to 15 cwt.*

MANCHESTER.—*If coal gas contains no carbonic acid, specific gravity is a proper test of its quality; the heavier it is the greater will be its illuminating power.*

NOTICES.

The subscription is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders must be made payable at the Charing-Cross Money-Order Office, to William H. Bennett, No. 42, Parliament Street, Westminster.

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Stamped copies, when forwarded by post, must be folded so as to expose the stamp; they are otherwise liable to the full postage charge for letters.

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All Communications to be addressed to the Editor, No. 42, Parliament Street, Westminster; and orders for Advertisements to the Publisher, Mr. W. B. King, No. 11, Bolt Court, Fleet Street.

THE JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, NOVEMBER 8, 1859.

NOTES UPON PASSING EVENTS.

IN our last number we proposed to return to the consideration of two leading articles in the *Times;* because, firstly, the subjects therein discussed were of themselves of the most important character; and, secondly, because the influence of that Journal is so marvellous that the errors or the falsehoods it renders current are likely to produce the most serious consequences, if they should not be contradicted at as early a period as possible. Unfortunately, the blunders and the false statements of the writers of the *Times* in technical matters can only be detected by professional readers, and *they* have rarely the time to spare to refute, or even to question, the nonsense written by the literary empirics of the daily Press. Moreover, it is notorious that the *Times* carefully excludes from its columns any communications which would be likely to invalidate its editorial infallibility—an instance of which has lately occurred in the dispute about the Gothic and the Classic styles of Architecture, and which so strikingly illustrates the tactics of the leading Journal in such cases, that it will be worth while to record it in some detail, for the edification of those who take their opinions ready made from the oracle of Printing House Square. The consequence of this system of suppressing discussion is, however, that broad, reckless assertions are too often made, and appear, from their passing unchallenged, to be admitted as true. Error is thus propagated, and serious mischief often inflicted upon society in general.

The tale about the Classics and Gothics is shortly as follows:—A Mr. Freeman wrote a very long and a very wordy and inaccurate letter upon the subject, which the *Times* inserted with all the honours of large, leaded type, and which Mr. Ruskin, with his usual contempt for English grammar and common sense, styled "exhaustive." To our own knowledge, replies to this extremely absurd letter have been sent. They were written by men of the highest standing in the Architectural profession, and signed with their names at full. But the *Times* never errs; and so these replies were suppressed, and Mr. Freeman's nonsense passes for unanswerable argument.

But to pass from this somewhat personal subject to the ones more immediately affecting public interests, we would observe that, in the *Times* of October 18th last, there appeared a leading article in the facetious line, wherein we suspect that we discover the "Roman hand" of a certain well-known translator and adapter of French farces, written avowedly for the purpose of rendering the dwellers in the Metropolis dissatisfied with their present water supply. Now the utter ignorance of the writer of this article, which unfortunately has been read by nearly all our public men, without any antidote, is in nothing more apparent than in the remedy he suggests for the purpose of obviating the evils he asserts to exist. Actually this learned Theban proposes to bring "the overflowing waters of the Bala Lake" from a distance of about 200 miles, for the supply of the Metropolis! and he then prattles about "tunnel aqueducts," "storing the produce of great storms," and the practice of the Romans in the execution of this description of municipal works. If this leading article mean anything, it must mean that our present supply of water is deficient, and that we Londoners ought at once to incur any amount of outlay in order to obtain a more copious one from a new source. Both these propositions we, speaking as professional men, and technically acquainted with the subject, flatly deny.

For, firstly, as regards the quantity of water supplied to the Metropolis, (which of course ultimately finds its way into the sewers, and thence into the great natural watercourse of the district, there to perform "all our hard work, all our dirty work, all our clean work,") the Thames has, even during this summer, supplied most copiously the various quarters of our continually increasing Metropolis which resort to it as a source of water supply—notwithstanding the marked deficiencies of the rainfall during the last three years. It is, moreover, absurd to say that within the reach of the tidal influence any difference in the volume of the river can prevail, excepting at the period of low tides. There has, no doubt, been a considerable difference in the quality of the tidal waters in the Thames, from that which they formerly possessed; but whatever deficiency in the quantity of the upland waters may have prevailed, it has been compensated in the lower reaches by the influx of sea-water. All the story about "the Thames in danger," then, resolves itself into the inference that the volume of the waters brought down from the upper watershed of that river has lately been diminished. No doubt this is true; for not only has the rainfall of late years been notably less than that of average periods, but the very perfection of the surface drainage has prevented the lower strata, which used to feed the deep-seated and more permanent springs, from receiving their normal supplies. If the writer of the *Times* were consistent, he would, under these circumstances, desire that the Thames and its affluents should not be resorted to at all for the supply of London; but he expressly states that the Bala Lake and the tunnel aqueduct "need only be regarded as an auxiliary supply to what we have already."

Did it ever occur to the "term-dinner-inspired" Engineer who wrote the leading article we are now considering, that the abstraction of the water from Loch Katrine itself has been considered by the practical Engineers of the Admiralty to expose the Forth to danger of precisely the same description as our would-be teacher supposes to exist for the Thames? Ah!

there are more things in Heaven and earth than are dreamt of in the philosophy of Printing House Square.

But what the London public really has to consider is where, and how, it could obtain increased supplies of water, should the population of the Metropolis continue to increase as it recently has done: or should the habits of the existing population render an increased consumption of water imperative. All the fine writing about "Bala Lake," and "many-storied aqueducts," will not solve this question; because at the present day no one would be justified, economically, in going to so preposterous a distance as Bala for the supply of London, and because the erection of such egregious follies as the Roquefavour Aqueduct, for instance, would be singularly in opposition to the present state of Engineering science. Water must be brought cheaply, as well as in a state of purity, if it be intended to confer the full amount of benefit it is susceptible of producing; and the mere distance and the physical nature of the country round the Bala Lake must always render the attainment of this condition impossible in its case. There are however streams, within a far more accessible range than any of the Welsh Lakes, to which we might resort; and it is notorious that judiciously conducted operations, like those lately executed by the Engineer of the Kent Water-Works, would, at a very trifling cost, in some cases materially affect the supply of London. For the present, then, the inhabitants of the metropolis have no reason to blush on reading the description of the Glasgow Water-Works—they would only have reason to blush if they allowed the Browns, Jones, and Robinsons of the daily Press to frighten them out of their propriety, or if they allowed these "cobblers to go beyond their lasts." Londoners have actually a very copious supply of water, and one which, in spite of the deliberate misrepresentations of certain authorities, is of a very satisfactory quality.

For any future wants, they may depend upon it that the water-sheds of the Thames and the Medway will yield them far more water than they can ever legitimately require.

The second leader of the *Times* to which we refer as being of a nature to produce a very injurious effect upon public opinion, appeared in the number of that Journal for Oct. 19, and was avowedly written for the purpose of calling attention to the result of the proceedings in the case of the dwellers of Bow Common *v.* Mr. Croll. Now, we repeat what we have often said before, viz., that no man in his senses would attempt to prove that impure air is more pleasant than pure air; or that manufactures of any description should be carried on in such a manner as to create an unnecessary nuisance. Very far indeed from this! We have always contended that the suppression of nuisances *by the proper local authorities*, and after legal proof of their existence, should be facilitated in every possible way. Equally with the men who, as the *Times* says, "were introducing the truths (?) of sanitary science to applauding hearers," but who, we contend, were only diffusing the falsehoods of a body of eager place-hunters—equally with these men, do we consider that private rights ought, in some cases, to be made subservient to public rights; and that manufacturers must be prepared to make great sacrifices in order to avoid interference, by their operations, with the comfort of those around them. But this being admitted, who is to draw the line between a real and an imaginary interference? who is to say what process is to be regarded as being so necessarily repulsive as to render its immediate suppression desirable? The *Times* and the Social Science mongers forget that there are many residual products of ordinary manufactures, and many waste portions of articles of daily consumption, which must be converted into articles of trade, at the risk even of creating a stink (to call things by their real names), in order to avoid the creation of far greater nuisances by their accumulation and decay. Many very useful and indispensable articles, too, cannot be made without the production of the odours so vehemently objected to; and we strongly suspect that even the *Times* itself would hesitate before it recommended the destruction of the Leather Trade of Bermondsey, or the Brewing Trade dispersed throughout London, simply because the smells attending those trades are unpleasant to numerous classes of our over-delicate citizens. The fact is, that most of the so-called unwholesome trades are necessary for the preservation and enjoyment of life by the public in general; and it is therefore desirable that certain localities, such as Bow Common, should be set aside, as it were, for their exercise. For years this has been the case; and any one who chose that part of the metropolis for his residence must have been aware that in so doing he was exposing himself to the emanations of a congeries of factories: he must have gone to the nuisance, in fact, and so has equitably no right to complain. We leave Mr. Croll's case entirely out of account in these remarks, and only address ourselves to the principles which we think ought to regulate the action of society in these matters; but we cannot help expressing our suspicion that the great influence and the well-known power of Mr. Croll has secured him a measure of justice which has not been accorded to others. Be this as it may, we think that Mr. Yardley substantially dealt in the case with strict justice; and that the proper course for him to have adopted was to refer the complaining parties to their remedy before a higher tribunal, after Mr. Croll had complied with all the suggestions of the scientific authorities who had been called in to advise him as to the means of carrying on his manufacture with the least possible annoyance to the public. To many people, it may be added, the publication of the *Times* is both physically and morally a nuisance: we wonder how the magnates of Printing House Square would like to be summoned before a magistrate on such a charge?

If all nuisances ought thus summarily to be abolished, may we ask why Mr. Leslie is allowed to waste the time and patience of the Metropolitan Board of Works in the manner he does? Of course it would be absurd to expect to make silk purses out of the auricular appendages of certain animals, or to extract harmonious sounds from that pachydermatous race; but really the inhabitants of St. George's, Hanover Square, must have had peculiar notions of their own dignity when they selected the "Representative man" they sent to the Board. Cannot the other members of this important body impose upon their very unruly colleague something like respect for the ordinary decencies of civilized life? The squabble which took place between Messrs. Leslie and Freeman on Friday last was worthy of Billingsgate, and as Mr. Leslie provoked it, he is the more to blame of the two. But what was King Thwaites about that he allowed such coarse words to be exchanged? He may depend on it that, if these things continue, his reign will be but short.

As to the question raised by Mr. Leslie with respect to the asserted error in the bill of quantities issued by Messrs. Roberts and Gotto for the Northern High-Level Sewer, it seems to us that the latter gentlemen have at least made a very good reply to Mr. Pole's Report on the matter, which Report, it is to be observed, seemed to be decidedly against them, and to have been written in a very unprofessional and partisan spirit. The accusation which Mr. Pole's Report substantially contains is, that the quantities ought to be measured "net"; but Messrs. Roberts and Gotto very properly reply by saying that it is impossible so to measure them; and that, even were they to have attempted such a course, they would have simply counteracted the express object for which they had been appointed—viz., the elimination, as far as it was possible, of the uncertain elements for making the tenders for the works, and the providing the elements for a fair and equal competition. Evidently Mr. Pole never made a Builder's Estimate *a parte ante*—to borrow a phrase—or he would not have talked of measuring quantities "net;" and Mr. Gotto especially has had easy work in disposing of him. Unfortunately there has been nothing yet done to remove the stigma of an unfair advantage given to one of the parties tendering; and Messrs. Gotto and Roberts have still neglected to teach Mr. Leslie that this description of slander ought not to be indulged in by parties occupying public positions, and therefore supposed to be gentlemen.

The subject connected with Civil Engineering which seems the most likely to engage public attention for some time to come is, however, the one connected with Harbours of Refuge, and the loss of the *Royal Charter* has given it a very sad additional interest at the present stormy season. And here we would observe, that whatever may be the quality of the boat-plates used in iron ship-buildings, whatever may be the value of the Board of Trade examinations of this class of ships, or whatever may be the defects in the mode of riveting boat-plates, in the cases which have fallen under the notice of the omniscient *Times*,—there would appear rather to be an error in the mode of putting together the framework of iron ships as usually adopted, than a defect in the nature of the materials employed. The *Birkenhead* and the *Royal Charter* broke in two, transversely to the long axis of the ships, which would seem to show that their frames were made in precisely the same way as those of ordinary wooden ships; or that they were built with transverse ribs fastened to a longitudinal keel of more or less strength, which ribs were subsequently kept in

their vertical positions by longitudinal ties, and the outer plates and the inner linings. In building the *Great Eastern*, however, the framing of the ship was made parallel to the axis, or to the keel; and she is, in fact, a gigantic tubular bridge with water-tight ends. If she were to strike on a rock, and to lose all her keelson, she would, in fact, hardly suffer—certainly she would not break in two; but in the old-fashioned style of framing, when once the keel has been broken, every hope of saving the ship must be lost. Most earnestly do we hope that the fearful tragedy of the *Royal Charter* may lead to a serious investigation of all the practical questions it thus forces upon the attention of Engineers and Shipbuilders.

In the meanwhile, the guardians of the national purse would do well to inquire into the results already attained by the enormous outlay on the Harbours of Dover, Portland, Alderney, Jersey, and Holyhead; and also into the very natural question as to whether some really efficient mode of providing refuge for our commercial marine could not be provided. On the average of a long series of years, it would seem that about three men a day are lost on our shores by shipwreck; and though unquestionably much of this misery is attributable to the unseaworthiness of far too many of our coasting craft, and to the proverbial carelessness of our seafaring population, yet there cannot be a doubt as to the necessity for providing some harbours of refuge on the Eastern coast and in the Irish Channel. As much as £3,552,000 has been already expended on the comparatively useless ports above named, and about £2,000,000 more are required to complete the works, *as estimated*, which, of course, means that they will cost £4,000,000. When completed, they will, however, only be of use as packet or as military stations, and the countless vessels of our commercial navy will still be left exposed to the fury of the elements. Surely this ought not to be the case; and with equal emphasis do we assert that there never was any reason for making the military harbours of refuge cost the awful sums that they have done,—and all to obtain results which are now universally admitted to be failures. The prosperity of our country is so intimately connected with the security of our commercial marine, and for the sake of easing the burthens upon our manufacturers we have exposed that marine to so unlimited a competition from untaxed foreigners, that in common policy, and in common justice, the nation ought to do something to diminish at least the local risks to which our own shipping is exposed.

In Sanitary matters we hear of little that requires notice. It seems that in our own Fen districts the fevers and agues, which have been so prevalent this year in Holland, have been equally violent; that the Cholera is continuing its ravages; that small-pox is very common; and that yellow fever has even appeared amongst us. Truly this is a goodly instalment from the upper part of Pandora's box! Let us trust that the Hope, which ought still to remain, may be that these dreadful tales have been great exaggerations after all; and that, in fact, they are only the bugbears by means of which sanitary officers retain place and power. It is worthy of remark, however, that, precisely at the time when these evils are pouring their phials upon us, the mortality of the Metropolis is considerably less than it would have been under normal circumstances; and that the favourable condition of the public health in all parts of the country has been, on the average, very apparent throughout the year.

In the range of scientific inquiries there is just at present rather a stagnation; and, with the exceptions of the controversy on the age of the Abbeville and Amiens flint axes, and of the inquiry into the periodicity of great deluges, we are hardly aware of the occurrence of any new subjects for discussion. As to the former, the evidence hitherto brought forward to prove the antiquity of the axes still seems to us to be very unsatisfactory; and, consequently, we are ourselves indisposed to give up any opinion we had previously entertained as to the period of the first appearance of our race upon the globe. As to the second, it appears that the most nervous prophets of coming deluges fix the return of the next one at a period of some five or six thousand years hence. We have therefore time to examine the matter at leisure—and we propose to avail ourselves of the privilege.

THE METROPOLITAN GAS SUPPLY.

The delegates from the metropolitan parishes, the managers of the gas inquiry, their honorary secretary, and especially their honorary engineer, ought to feel greatly obliged to us for the space we devote to notice their proceedings. Nearly five pages of our last number were so occupied; and whatever other cause Mr. Hughes may have of complaint against us, he cannot at least charge us with neglect. So anxious, indeed, were we to give him full measure of justice, that we inserted his long letter, though only received at the eleventh hour. It is not, however, it must be candidly admitted, an unmixed sentiment of generosity that actuated us in thus giving publicity to the statements and declarations of the delegates and their officers, but rather a conviction that they for the most part so completely refute themselves, and expose their own absurdities, that the cause of truth and justice is promoted by the representations which are intended to mislead.

If there be anything unsatisfactory in the present conditions of the gas supply of the metropolis, the delegates have miserably failed to find it out and to suggest a remedy. By founding their grievances on what is afterwards admitted to be a public benefit; by shifting the ground of complaint from one point to another; by devising schemes of reform one day that are denounced as impracticable or useless the next; by assumptions that are contradicted by well-established facts; by making statements on one occasion that completely contradict their assertions on another, they have contrived to take away the ground from under their alleged grievances, and have only succeeded in showing their querulous versatility. In endeavouring to find a solid ground of complaint, the delegates have got among quicksands, and on discovering that one foundation is giving way, they rush to another spot, and desert, as altogether worthless, the position they had before represented to be firm as a rock. A remarkable example of this facility in deserting their strongholds is afforded in Mr. Hughes's letter. It may be recollected that one of the most laborious efforts of the managers of the metropolitan gas inquiry was the preparation, in a tabular form, of returns showing the condition of the public and private lighting of the metropolitan districts. One of the columns of those returns purported to give the "number of hours per annum during which each lamp burns;" and another one stated "the cubic feet per hour consumed by each lamp, as per contract." Taking those returns as a basis, we compiled another table, with additional particulars, to show the relative prices, per 1000 feet of gas consumed, paid by private consumers and for the public lamps, from which it appeared that the comparative undercharge on the public lighting of the metropolis amounted to £32,240 per annum. This result, clearly deduced from the data obtained with much care by the delegates, being very different from their anticipated conclusions, Mr. Hughes not only repudiates the returns, but he wishes to father them on us. "You show," he observes, "*on a certain supposition which you make*, that the much-oppressed London gas companies are actually underpaid to the extent of more than £32,000 per annum for the gas which they supply to the public lamps." That "supposition," as he now chooses to call it, was stated as a fact in his own returns, but since it has been found to bear evidence against him, Mr. Hughes is now anxious to disown it, and at present he will rely on nothing but his own experiments. Those experiments inform him that instead of 21,520 feet of gas, which the returns stated to be the annual consumption per lamp, the average quantity consumed does not exceed 16,000 feet. Mr. Hughes's antecedents, however, have proved him not to be infallible; and as it is well known that the ablest and most disinterested men that could be found have been employed by the gas companies to make similar experiments with very different results, Mr. Hughes must excuse us if we prefer the statements in his carefully-collected returns, backed by such corroborative proofs, to the inferences deduced from his recent experimental researches.

Mr. Hughes having satisfied himself that the price of gas supplied to public lamps is greater than the charge to private consumers, proceeds, *secundum artem*, to prove that it ought to be much less. To establish that position he refers to the practice in other towns; to the advantage the gas companies derive from the facility of collecting the sums due for public lights and from the avoidance of bad debts; and he mentions compensation for the injury and annoyance of breaking up the streets as an additional claim on the gas companies for reducing their charges for public lighting. With respect to the first of these reasons, we may observe that the practice in other towns affords no justification for departure from sound principles, under whatever circumstances it may have been adopted; and it is notorious that gas companies have, in most such in-

stances, been either subjected to unfair pressure by local authorities, or have made the lower price charged for the public lights a condition of being granted special privileges. Several instances of bargains of this kind occur in the returns drawn up by the managers of the gas inquiry, wherein certain parishes in London are mentioned as being lighted at a lower rate on the express condition that no other company shall be allowed to lay down pipes within the district. Such arrangements for keeping down the price of the public lights are directly opposed to the principle of competition which at other times was strongly advocated by Mr. Hughes, and they should rather serve as warnings to be shunned than as examples to be followed. As a set-off to the saving arising from the facility of collection and the avoidance of bad debts, which together may average about 2½ per cent. on the returns of a company for gas sold, there is the supply of a service-pipe to each lamp for a consumption of about 20,000 cubic feet per annum, which is much less than the average supply to each private consumer in London. As regards compensation for breaking up the streets, the gas companies may claim a higher price for the gas supplied to the public lamps, on account of the extortionate demands of the parish authorities for the repair of the pavements broken up; and if the public require any further compensation, individual gas consumers who participate in the inconvenience are quite as much entitled to it as the ratepayers in general. But we need not stop to bandy words with Mr. Hughes on these points, for in the main we agree, and on more than one occasion we have expressed the opinion that the supply of the public lights should be made compulsory at the lowest price charged to the most favoured consumers.

Mr. Hughes asks why we have taken no notice of the public lamps supplied by cannel gas; and then, as an instance of grievance arising from the monopoly of the Chartered Company, he states a case which, as usual when Mr. Hughes condescends to facts and figures, completely disproves his assertions; for the price proposed to be charged by the Chartered Company for a cannel gaslight equal to 10 candles is proportionately less, light for light, than the average charge for public lighting in the days of competition. He appeals to us to confirm his statement, "that of cannel gas with an illuminating power of 25 candles, which is about the present quality, it will only require two feet an hour to give a light equal to 10 candles." Instead of confirming, we are compelled to contradict. Whether Mr. Hughes finds it to be so in his experimental researches, of course we cannot say; but every practical gas engineer will tell him that there is no fact better established in gas lighting than that the light emitted is diminished in a greater ratio than the diminished quantity of gas consumed. His calculation, therefore, founded on the proportionate ratio of decrease of light, is, like most of his other estimates, but "the baseless fabric of a vision."

We are somewhat surprised that Mr. Hughes should allude to cannel gas after the woful exposure of his inconsistencies on that subject in his cross-examination before the committee of the House of Commons. He then wished to establish a grievance against the Chartered Company because they supplied their customers with 25-candle gas for 6s. per 1000 instead of 12-candle gas for 4s. 6d.; and he stated that, according to his notions of justice, the gas companies should reduce the price whenever the quality of the gas was under 12 candles, but that they had no claim to increase the price when supplying gas of a superior quality. We hoped that the lesson Mr. Hughes then learnt would have made a more durable impression, but it seems that he is proof against experience and exposure. Neither were we prepared, after the admissions made in the committee by Mr. Hughes, as well as by other witnesses, of the public benefits attending the districting arrangements, to find him again alluding to the monopoly of the gas companies as a grievance. If anything were wanting to prove the disadvantage and inconvenience of competition in the supply of gas, the remarks of Mr. Dakin at the recent meeting of the Great Central Gas Consumers' Company would supply the deficiency. That company was established essentially on the principle of competition, and now we find the chairman complaining somewhat bitterly of its effects, and showing the necessity of adopting the districting arrangement in the City. We hear much from the delegates of the extortionate demands of the gas companies, but their worst representations scarcely exceed the extortionate demands of the large consumers mentioned by Mr. Dakin, who, under threat of transferring their custom, demand unreasonably long credit, and even require to have the gas-fittings on their premises furnished gratuitously. All the gas companies of the metropolis were, previously to the districting arrangements, exposed to similar extortionate demands, not from private consumers only, but from the vestries, and many of them yielded to the pressure put upon them rather than lose the supply of a large consumer or miss the opportunity of laying down their pipes in certain districts. Now that the pressure is removed, the gas companies reasonably enough refuse to submit any longer to the conditions thus forced upon them. The question to be considered is, whether the terms proposed for lighting the public lamps are reasonable, and not whether they agree with former contracts. We have before shown that the charge for gas so supplied was £32,248 per annum less than it would have been for the same quantity had it been supplied to private consumers, and it is unfair to them as well as to the gas companies that this disproportion should continue.

Circular to Gas Companies.

The stagnation which has for the last few months reigned in the gas-meter trade, in consequence of the unwillingness of gas companies to accept meters the accuracy of which was not guaranteed by an official stamp, is we trust now approaching its term. The 13th of November falling this year on a Sunday, the duly authenticated standard measures required by the 23rd and 24th Vic., cap. 66, must be lodged in the office of the Comptroller of the Exchequer on Saturday the 12th. The chief scientific celebrities of the day are, we believe, busily engaged in the preparation of these standards, and there is every prospect of their labours being completed within the required time. This is the first step in carrying the Act into execution, and it now devolves on the borough Justices to take the next step by appointing inspectors within their several jurisdictions before the 13th of February next, or, in default of the borough Justices adopting the Act, the county Justices must settle the districts and appoint inspectors before the 13th of May next.

We have to thank a correspondent for pointing out to us that, in subjecting a wet meter to the tests indicated in our last, it would be preferable to commence by overfilling it with water and testing it at the highest water-level first, previous to testing it at the lowest water-level, instead of commencing, as we suggested, at the low water-level and ending with high water—a course of proceeding which would leave the outlet from the syphon unsealed, and thus permit unregistered gas to be obtained therefrom until it had become sealed by overcharging the meter. Our correspondent is quite right in this respect, and we recommend our readers to follow his suggestion in conducting any such experiments.

The reopening of the doors of Westminster Hall reminds us that the wearisome case of *Hills v. The London Gas Company* may shortly come on again, upon the motion for a new trial on the ground of the verdict being against the weight of evidence. Since the matter was last before the public, we have received from Denmark samples of a native hydrated peroxide of iron which is found in that country in inexhaustible quantities, and is extensively used in the Danish gas-works for the purification of gas, either alone, or, what is preferable, in combination with chalk. It is found in considerable masses, in which state, we are informed, it can be delivered at the chief ports on the east coast of England for 30s. or 35s. per ton, at which rate it appears to us to be the cheapest known material for the purification of gas. It only requires to be reduced to a coarse powder to prepare it for the purifiers. Its affinity for sulphur is equal to that of the artificially prepared or precipitated oxide; it revivifies as easily, and it becomes again active when the sulphur has been driven off by heat. Experiments are now in progress at a provincial gas-work with the view of practically testing it in this country, and as it infringes upon no patent, much interest is excited in the result, of which we shall give due notice. In the meantime, Mr. Barlow will be happy to give such further information as may be sought for by any one desirous of making an experiment.

We fear the true interests of the public are lost sight of in the angry discussions which are daily taking place between the metropolitan authorities and the gas companies with regard to the quantity of gas consumed by the public lights, and we feel assured that, if each party would fairly and dispassionately examine the question, some solution might be arrived at less monstrous than that now threatened in the Westminster district, of

attaching a meter to each public lamp. Is all the ingenuity which has been expended of late years on regulators for street lamps utterly thrown away? We do not allude to the worthless things sold as "moderators," but to really sensible contrivances, such as Sugg's, Hulett's, Paddon's, and others, which aim at obtaining a uniform flame under a varying pressure in the mains. Do they all fail in accomplishing that object? At all events, we hear of no attempts to introduce them in the districts where the quarrel rages most, although we see them here and there in localities where no such misunderstanding exists. As for burners there can be no difficulty, as we can guarantee that Leoni's "Adamas," or moulded and baked silicate of magnesia burner nibs are unalterable in the dimensions of their apertures, and are in this respect superior to the ordinary metallic burner nibs, which soon give a ragged and irregular flame, from the oxidation of the slit or aperture. The Adamas burner, on the contrary, is inoxidizable, it resists the file, and may even be plunged into water when red hot without injury. It is not more costly than the ordinary metallic burner, and is less so than the "lava" burners recently introduced from Germany. What is urgently wanted is a combination of regulator and burner, limiting the consumption of gas to a uniform quantity per hour, with the tap fully open, when the pressure in the mains exceeds one inch; and we have a strong impression that such a combination might be arrived at were the subject investigated by disinterested and unprejudiced persons.

Our remarks on the agitation respecting the Manchester gas supply have been copied into the local papers in a disjointed form, one party seizing hold of one paragraph in support of its views, and the other party of the second paragraph in support of theirs, neither party apparently being willing to take the impartial view of the question at issue which we are in a position to put forth. The establishment has been created on the credit of the ratepayers, who would have been liable to make up the deficiency had the profits been insufficient to pay the interest on the funds borrowed for carrying on the undertaking; instead of which there has been a surplus, and that surplus has been appropriated in the manner provided by the several Acts of Parliament passed from time to time for regulating its appropriation. The latest accounts we have seen are to Midsummer, 1858, wherein the invested and floating assets of the undertaking are represented as being £442,422, and we maintain that any movement with the view of reducing the profit to an extent so as to yield less than 10 per cent. on this sum is unjust to the ratepayers, who have, by directly or indirectly pledging their credit, raised this capital. The whole matter must, however, undergo investigation in the next session of Parliament, as the Act by which the division of the gas profits is regulated expires in 1861, and the consumers will have an opportunity of being heard before any new scheme is settled.

With the view of complying with the numerous applications made to us for a continuation of the share list of gas companies we some years since published periodically, we have caused tabular forms to be forwarded to every gas company in the United Kingdom, with a request that they may be filled up and returned. A large number have been so returned, but as many of the provincial companies have not as yet responded to the application, we earnestly entreat them to do so forthwith; and if any company has failed to receive a form, it will be forwarded to them on application to Mr. W. B. King, 11, Bolt Court, Fleet Street. It is our intention, if the returns are sufficiently complete, to compile a directory, with the names of the chief officials of gas companies throughout the country.

Correspondence.

MR. HUGHES AND THE METROPOLITAN GAS SUPPLY.

SIR,—In your JOURNAL of the 25th ult. I observe a letter from Mr. Hughes, in which he endeavours, as usual, to mystify the public by telling only half the truth. So far as his statements affect the Chartered Gas Company, I will supply the other half.

Mr. Hughes states that, "amongst other *objections* raised by the company" to the renewal of their contract with the parishes of St. Margaret and St. John, Westminster, was this:—"*Whereas the local authority had hitherto stipulated for a fixed quantity of gas per hour—viz., 2½ feet—the company having now secured the monopoly* thought this might be dispensed with." This statement is simply untrue; the company made no such objection. They did, however, refuse to bind themselves to supply any given quantity of gas, not because they had got what Mr. Hughes calls a monopoly, but for the following reasons, and which were stated to Mr. Hughes himself when he attended with a deputation of the local board on the directors of the company, viz.:—

1. Because it was immaterial to the parishes what quantity of gas was supplied, so long as the quantity of light stipulated for each lamp was furnished; and if the company could supply the light required from one foot of superior, and at the same time more costly gas, the parish had no right to require two or three feet to be given.

2. Because the directors did not choose again to subject themselves to a charge of "*imposing on the parish to the extent of* £2000 *per annum*," which any ignorant but self-sufficient person might think fit to make in the publication of tables founded on experiments remarkable to the initiated only for absurdity and folly, but at the same time calculated to deceive those who did not understand the subject.

Mr. Hughes then goes on to say, "No one can be surprised for a moment at such a proposition who has watched *the circumstances of 'the districting,' and the consequent monopoly it has produced; but the only surprise is that this very innocent proposition was made so early and at a time when public attention is so keenly alive to the subject.*"

By this statement Mr Hughes evidently wishes the public to infer that such a stipulation is injurious to the parishes, and that it was only made by the company in consequence of the alleged monopoly obtained through "*the districting.*" It will scarcely be credited, and yet the fact is, and Mr. Hughes must have been well aware of it when he penned the above statement, that the parishes of St. Margaret and St. John had in the year 1854 (long before the "districting") entered into a contract with the Chartered Gas Company for supplying the public lamps with cannel gas, *without the slightest stipulation as to the quantity of gas to be supplied, and only stipulating for the quantity of light.* And Mr. Hughes also well knows that the contracts which now are, and for some time have been, in existence with the Equitable and Western Companies for lighting parts of the same parishes, contain no stipulation for quantity of gas, but only for quantity of light.

Mr. Hughes then sagaciously adds, "*Of course the company knows very well that the light of a street lamp can never be tested as burning in the street.*"

Of course the company knows no such thing; such a test can be readily and accurately taken by those who understand their business, although such knowledge may be beyond Mr. Hughes's capacity.

Mr. Hughes then complains of the price charged, and argues upon the assumption that the company is bound to supply gas of an illuminating power equal to 25 candles. This, however, is not the case, and his whole argument falls to the ground.

He forgets also to state, what he must have well known, that in 1857 the parish refused to contract for a longer period than one year; that the company had to expend upwards of £500 in laying duplicate mains to enable them to supply cannel gas throughout the whole of the parishes; and that the local board had lately increased the rating of the company's premises from £5000 to £9000 at one fell swoop, all which circumstances were necessarily taken into consideration in fixing the terms of a fresh contract. On the present occasion, as the contract is for a longer period, the company have proposed to reduce the price, even although the "districting" has been completed, and for which liberality Mr. Hughes appears by no means grateful.

Mr. Hughes has also forgotten to state the best and simplest answer to all his complaints about quantity and quality—viz., that the company have offered to supply the parish lamps by meter, on the same terms on which they supply the private consumer, or in any other way that will satisfactorily prove the quantity supplied and at the same time prevent all future disputes and wrangling.

With respect to Mr. Hughes's observations as to the company's claim to have the power of laying mains whenever they please, I will only remark that they now have the power in the present contract, and they only require to have it extended to enable them to lay mains whenever required for improving the supply to the public, and not for their own profit and amusement; and I am much surprised that such a stickler for the public interest as Mr. Hughes should for a moment object to such a reasonable requirement. He may rely upon it, the company does not throw away thousands merely for the pleasure of disturbing the pavements.

The company also feel bound to press for such a stipulation most strongly with the parishes of St. Margaret and St. John, as they have on every occasion when applied to thrown every impediment in their way, and on one occasion actually made the company pay a considerable sum as the price of their consent.

With respect to the penalties for non-performance of the contract, Mr. Hughes has been informed that, although no such claim is made by private consumers, the company do not object to any reasonable penalties being stated in the contract.

In conclusion, I will venture to say, without fear of contradiction, that the parishes of St. Margaret and St. John are obtaining a far greater quantity of light than the company contract to give them, and that the whole of the metropolis has never been so well and so cheaply lighted as at the present time, notwithstanding the "districting."

F. J. EVANS.

Chartered Gas-Works, Horseferry Road, Nov. 1, 1859.

SIR,—Will you oblige me by inserting in your next number the accompanying letter from Mr. Locke, M.P. for Southwark, being in reply to a letter from me, directing his attention to the remarks made by Mr. Richards at the late meeting of the Imperial Gas Company, and reported in your last number?

JAMES BEAL.

209, *Piccadilly, Nov.* 4, 1859.

63, *Eaton Place, Nov.* 1, 1859.

Dear Sir,—In reply to your letter of the 25th ult., I beg to say that the observations of Mr. Richards, the chairman of the half-yearly meeting of the Imperial Gas Company, to which you have called my attention, are not correct. Mr. Richards is reported to have said that "All the clauses and conditions of a bill were discussed and signed by Mr. Locke, the member for Southwark, when, to our surprise," &c.

The facts are as follows:—In the sub-committee, consisting of Sir W. Hayter and Mr. Russell, representing the companies, and Sir John Shelley and myself representing the consumers, a great many clauses were agreed to and signed by all four of us, as being fair and equitable, and such as we could recommend to the general committee to be inserted in a bill; but there were two most important points upon which we could come to no agreement.

These were, first, the illuminating power; secondly, the right of appeal to the Board of Trade. We fixed the illuminating power for a certain price at 12 *sperm* candles, they contended for 12 *wax* candles; and as to the right of appeal to the Board of Trade, they wished to give it to the companies *only*, when they considered the price too low to be remunerative, whereas we insisted upon the same right being extended to the consumers when they thought the price charged was too high. There might have been likewise some minor questions upon which we could not agree, but I perfectly recollect those two, involving the important questions of "price" and "quality," upon which we disagreed, and were thereby prevented from recommending the clauses of a bill to the general committee, as we could not agree together to sign clauses providing for these two questions. You will therefore see that I did not sign *all* the clauses of a bill, as Mr. Richards is reported in the JOURNAL OF GAS LIGHTING, in their report of the meeting, to have asserted that I did.

To James Beal, Esq., Hon. Sec. (Signed) JOHN LOCKE.

COMPENSATING GAS-METERS.

SIR,—It was not my intention to have troubled you with any further correspondence upon the above subject, but Mr. W. Crosley having given me a challenge, and asked one or two questions in his letter published in your last JOURNAL, I feel it to be only an act of courtesy to reply; at the same time, I must decline in future to proceed further with the discussion unless Mr. Crosley will confine himself to the question in a purely scientific way, as I do not take sufficient interest in the meter business to enter into mere trade squabbles upon the subject.

Mr. Crosley asks me if I consider 10 lights to be the duty of a 3-light meter? In reply, I say certainly not; and, at the gas-works under my control, I do not allow more than 3 lights to be put on a 3-light meter when it is first fixed, but it often happens that more lights are added by the consumer, until the number reaches 10 or even more; and I know that with a good wet meter the gas will be measured practically correct under these circumstances, and one of my chief aims in the meter I lately patented has been to get an instrument that would measure correctly all the gas that could be passed through it at 1-inch pressure. Mr. Crosley has made some elaborate calculations to show that, by my last new meter, I lift one drop of water to every 55 feet of gas consumed. Now I think, as Mr. Crosley observed in a former letter, it would be as well if your correspondents confined themselves to facts. Mr. Crosley says, let us take another position. Suppose the consumer or any other person has blown down the outlet fittings (a very common practice), and has thereby deranged the water-line, his quick lift of water would speedily restore the water-level, but he doubts if ever mine would restore it again. *Perhaps* it is as Mr. Crosley here states, but I think he will find himself mistaken when he tries the experiment. Towards the close of Mr. Crosley's review he expresses a conviction that I am at least eleven times more in the wrong than he was aware of when he last addressed you. If this if the case, he will the more readily accept the offer I shall presently make him.

Mr. Crosley gives me a public challenge to come to his works and test any meter he may have in stock, the *testing to be performed according to Act of Parliament, and in the presence of Mr. Crosley and his assistants.* Now I have not accepted this challenge for two reasons: the first is, that I have already seen Mr. Crosley's meters tested; and the second is, that having been much engaged in witnessing experiments at different places, I have seen results obtained by inventors and their assistants that could not be obtained in practice by any one else. I, however, give him this public challenge:—I will meet him at either of the meter-provers' in London, he being provided with a 3-light meter made agreeable to the specification of his patent of 1856, and finished with a glass front, and I being furnished with a 3-light glass-fronted meter made on the plan of my late patent. The meters shall both be put to precisely the same tests, when the questions of power, registration from one light to the greatest number the meters will pass, and the several other little matters that we do not quite agree upon, may be finally set at rest; the owner of the meter least capable of fulfilling the conditions of a good meter to pay the expenses of the testing. I trust Mr. Crosley will see the propriety of having the meters proved by a disinterested person, and that he will announce in your next number that he accepts my challenge, and appoint the time and place where the meters are to be proved.

Meter and Gas Apparatus Works, C. R. MEAD.

176, *Great Dover Street, Borough, London,*

Nov. 4, 1859.

SUPERANNUATION AND SICK FUNDS.

SIR,—I have read with much satisfaction the article on "Superannuation and Sick Funds" in your last number, and, as you there request the co-operation of your professional brethren in assisting to establish such excellent institutions, I enclose a copy of the rules of a sick-fund I introduced here, and which was formed on the 9th of July last, for the benefit of the workmen employed at this station.

Although no workman is required to belong to the society, it numbers 195 members. In addition to his weekly subscription of 3d. as a member of the sick-fund, each workman has to subscribe 1d. weekly towards the funds of the Bristol Royal Infirmary, the General Hospital, and the Dispensary, in return for which the two former establishments furnish in and out-patient notes—the Dispensary giving medical attendance at the men's houses, and supplying medicines.

There has been a large amount of sickness amongst the workmen during the present year: since January last, 37·39 per cent. of them have had occasion to visit, through accident or sickness, one or other of the above establishments,—of that 37·39 per cent., the stokers form 13·87 per cent.; the masons, 5·04 per cent.; the smiths, 1·68 per cent.; and the labourers, 16·80 per cent. In addition, 88 sick notes have been supplied to members of the families (principally the wives) of the various workmen engaged here.

By Rule 10, the funds of the society "*as subscribed by the members only,* shall be divided every year," &c., so that any donation the directors of the company may be pleased to give will not be subject to that division, but which it is intended to reserve as the nucleus of a superannuation-fund, &c., a code of rules for governing which is now under consideration.

F. LESLIE, Superintendent.

Bristol United Gaslight Company,
Avon Street Station, St. Philip's, Nov. 1, 1859.

RULES AND REGULATIONS OF THE SICK FUND OF THE BRISTOL UNITED GAS COMPANY.

RULE 1. That this society consist of an unlimited number of members, being persons employed at the Avon Street station of the Bristol United Gaslight Company's works.

2. That this society be empowered to choose a treasurer and secretary, and two stewards; that the stewards be chosen every three months as they stand on the books, or be fined *sixpence;* and that the secretary be empowered by the members to pay all moneys of the society to the sick members, providing there is a certificate from a medical man, or other satisfactory proof given.

3. That during the time a member is on the sick-fund he must not be from home later than five o'clock during the winter months, nor later than eight o'clock during the summer months; if he is detected from home after that time he shall be fined *one shilling,* or his payments discontinued for that illness, unless sanctioned by the secretary or referee.

4. That each sick member be allowed *eight shillings* per week for twelve weeks, and then *four shillings* for six weeks, and no member to be allowed any more until after the expiration of *twelve* months, nor be entitled to any payment for less than one week's sickness in the first instance, but all odd days over the week to be allowed (Sunday excepted). When a member is taken ill or meets with an accident he must send word to the secretary, who shall inform the steward, who must visit the sick member, and report the same to the secretary; and if either party neglect he is to be fined *one shilling* for each and every such neglect.—That no member be allowed to withdraw his money from the funds, save as hereinafter mentioned.

5. That if any member, during the time he is receiving the benefit of the fund, is found gaming or intoxicated, he shall, on proof thereof, be excluded from the society, and never admitted again; and if he goes from home he must leave word where he is gone to, or be fined *one shilling* for each neglect; and that the distance must not be more than three miles from his home, without the consent of the secretary.

6. That no allowance be made for any hurt received by voluntary fighting, drunkenness, or the venereal disease.

7. That each member pay to the secretary *threepence* every week; and, if not paid in two weeks, to be fined *threepence* in addition; and, if not paid in four weeks, to be fined *sixpence in addition;* and, if not paid in eight weeks, *to be excluded from the society,* unless a satisfactory reason for non-payment be given.

8. That the funds of the society shall be for its free sick members, *each member to be free in three months after his admission,* provided he is not in arrears; and a sick member must be clear on the books before receiving any benefit from the fund.

9. That the funds of this society shall not be broken up while seven members belong to it; and if any member propose the breaking up of the society he shall be fined *two shillings and sixpence,* or be excluded from the society.

10. That the funds of this society, *as subscribed by the members only,* shall be divided every year, according to the sum paid in by each member, on the twenty-first day of December; and that *three shillings* be left from each member for the support of any sick member; but, a member having been paid *any sum from the fund on account of death, or received more than one week's sick pay, will not be entitled to participate in any such division of the funds.* If a member has been for *one week only* on the funds of the society, such *one week's payment to him* shall be considered as *part payment* of the whole sum which he would otherwise have been entitled to receive.

11. That in case the funds are insufficient to meet the demands required, the stewards shall collect a sum from each member adequate to defray the same.

12. That at a free member's death his wife shall receive *five pounds,* or any such person as the members may think fit, provided he has no wife; and that at a free member's wife's death he shall receive *two pounds ten shillings,* providing satisfactory information be given to the members; each member to pay *one shilling* extra at the death of a free member, and *sixpence* at the death of a free member's wife.

13. That this society shall be managed by a secretary (*who shall be a subscribing member, and elected annually by the free members when the funds are divided*), a treasurer, and two stewards; and that a book shall be provided, in which shall be entered all sums received and paid on account of the society. The secretary to be empowered to get such books as may from time to time be required for the use of the society, the expense to be defrayed from the general fund. That the secretary be paid *sixpence* from each member at sharing time for his trouble.

14. That the books of rules shall be printed, and each member supplied with a copy thereof, and sign his name therein, for which he shall pay *sixpence;* and that all fines for transgression, from whatever cause, be paid and added to the general fund.

15. That if any *free* member shall leave the company's employment within a period of *nine months* from his becoming a *free member, not having received any benefit from the fund in the meantime, half* of the sum he may have subscribed beyond the first three months shall be paid him; unless he be dismissed from the works *for drunkenness or other improper conduct,* in which case he shall forfeit all claim to any benefit from the society.

16. That if any member neglect to pay up on quarterly nights he be fined *one shilling,* and if he objects to pay *he be dismissed from the society,* and thereby forfeit all claim to benefit from the fund.

17. That it shall be competent for any *three* members to request the secretary, by a signed requisition, to call a meeting of the members, such meeting to have power to rescind, alter, or frame any rule, as may be deemed expedient for the better go-

vernment of the society; provided that no such alteration, new rule, or by-law, be inconsistent or at variance with these regulations.

18. That the treasurer cause to be paid weekly into the Bristol Savings Bank all moneys and subscriptions received on account of the fund. That the superintendent of the works be the referee; that appeals against his decision be referred to two arbitrators, one of whom shall be chosen by himself and the other by the free members of the society. Such arbitrators' decision in all cases shall be final.

OPEN-ENDED RETORTS.

SIR,—In your last issue of the JOURNAL OF GAS LIGHTING I observe a sketch and short description of an "open-ended retort," communicated by Mr. James Robb, of Haddington. That notice, omitting to say where this form of retort was first used, or by whom devised, very naturally leaves your readers to infer that it is Mr. Robb's own invention.

Allow me most respectfully to say that though such a deduction is both rational and natural, yet it is a mistake; that the device is *not* Mr. Robb's, but mine; that he has had nothing further to do with it, than quietly to adopt it as his own, after seeing six of them in operation in Dalkeith Gas-Works, between two and three years ago. It is gratifying to observe, however, that he can now perceive a quality in this construction of retort to make *the plan worthy of a trial*, as (at the time of his visit to Dalkeith, in company with Mr. James Paterson, of Berwick Gas-Works) he had no such perception, especially (so far as he was concerned) as he had no carbon to remove. The fact that he has adopted it, and can recommend its adoption to others, indicates that he does see some of its attendant advantages, and is overtaken by that calamity (common to successful gas managers) of having carbon to remove. But if Mr. Robb's letter contains all the advantages which he sees or feels from the retort, I regret to say that he does not yet understand all the peculiarities of this *peculiar* retort; nor the reason why *a conical end with a six-inch hole* was adopted.

From the experience of seven different gas companies, which have adopted the retorts (exclusive of Dalkeith and Haddington), and from between three and four years' personal experience of their use, I shall endeavour in your next to add some other reasons why *this plan is well worth a trial wherever there is a possibility of introducing it.*

Gas-Works, Dalkeith, Nov. 3, 1859. JOHN YOUNG.

ASPHALTE CONCRETE.

SIR,—I am fully persuaded that coal tar, "*now becoming a drug in many of our gas-works*," may be made into several useful articles; boiled with the spare heat "*any gas-works can supply*" into pitch, mixed with sand and gravel, and made into blocks of any size or shape, it makes an admirable substitute for stone for underground works. It is indestructible where kept cool.

I have myself just finished a neat little gasholder-tank, 24½ feet diameter and 15 feet deep, built with blocks made as above, and moulded in loam, each block being part of the circle. Blocks of any size or form may be made in this manner; cylinders of any size for drains might be made in 3 or 4-feet lengths. Nor is this all the profit; during the boiling into pitch the pan might be covered, and the naphtha collected as from a retort or still.

We know there has always been a steady sale for naphtha; it would become cheaper, but new uses would daily be discovered.

Seaham Gas-Works, Oct. 24, 1859. H. W. SMITH.

Register of New Patents.

1010.—THOMAS SEAVILLE TRUSS, C.E., of Darlington, in the co. of Durham, for "*Improvements in the construction of pipes, and in the mode of joining the same.*" Patent dated April 21, 1859.

These improvements consist in certain adaptations and arrangements of parts forming the joints for pipes used for the transmission of gas, air, water, steam, and other fluids, whereby an elastic and expansive joint is made which allows the end of any pipe so connected to be moved from a given level in any direction; as also for the pipes to be deflected without breaking or otherwise damaging the joint. Provision is likewise made for the longitudinal contraction and expansion of pipes which occur to pipes used for the transmission of steam, gas, water, air, or other fluids. The pipes connected together with an elastic and expansive joint of this description are formed with a V flange at each end, and are united by means of a coupling-strap. In one arrangement the coupling-strap is in two parts; each part is forked at one end and has a projection at its other end. The projection enters between the parts of the fork, thus forming what is called a he and she joint. The parts of the strap are held together by pins, or by bolts and nuts if preferred. There are lugs or ears on the strap, between which instruments are introduced in order to turn the strap when it is desired to screw it upon the flange.

To connect pipes according to this arrangement, the ends are brought nearly together; the joint-making material is then applied, and the parts of the coupling-strap are placed around the pipes and the whole is screwed up with bolts and nuts.

The packing material preferred for connecting pipes used for the transmission of water, steam, or air, is indiarubber, but for gas worsted packing previously passed through an alkaline is employed.

As this invention is capable of various modifications without departing from the principle thereof, the patentee does not restrict himself to material dimensions or precise form of flanges, nor to the making of the same solid with the pipes, nor to the precise form of the projections on the coupling-strap jointures, nor to the making of such projections solid with the coupling-strap, inasmuch as a recess can be made, and a loose die or block of suitable material may be inserted.

The claim is for—

1. The making of the jointures of coupling-straps, with recesses and corresponding projections or loose blocks.

2. The making of pipes with flanges at or adjoining their ends, to be used with and operated upon by a compressing or nut coupling-strap, with packing material upon, between, or around the same, and embraced by the strap.

The patentee wishes it to be distinctly understood that he does not claim pipes with flanges at their ends secured together by bolts, pins, or cotters passing through the same.

1052.—JEAN MARIE CIROUX, of Brussels, merchant, for "*Improvements in lamp glasses and shades applicable to gas-burners, lighthouses, and railway signals.*" Provisional protection only obtained. Dated April 27, 1859.

This invention consists in making glasses and shades of crystal, rendered convex either externally or internally or on both sides, for lamps and lanterns, and applicable to certain gas-burners, to lighthouses, and railway signals, which convexity is obtained by known means, and by which a greater brightness is given to the light than by the ordinary glasses.

1058.—JAMES LAING, of the Independent Gas-Works, Haggerston, in the co. of Middlesex, engineer, for "*Improvements in wet gas-meters.*" Patent dated April 27, 1859.

This invention consists in the application of a ball or other suitable valve, suspended by an arm or other suitable means from above, in either or both of the gas passages of the meter, in such manner that when the meter is in correct position such valves will hang free of the openings they are capable of closing, but, so soon as any tilting takes place, these openings will be closed and the passage of gas stopped.

The claim is for the mode of arranging valves and parts acting therewith to the inlet-pipes of water gas-meters for the purpose explained.

1061.—THOMAS LACEY, of Grafton Street, Westminster, gas engineer, for "*Improvements in gas-regulators.*" Patent dated April 27, 1859.

The claim is for—

1. The use of a very thin sheet of india-rubber, or india-rubber fabric, in one or more folds to form a diaphragm, one side of which diaphragm is open to the atmosphere and the other side subjected to the pressure of the gas, such diaphragm being bound over the circumference and to the outer side of a suitable ring by an india-rubber band or otherwise.

2. The method of fixing an india-rubber diaphragm to a disc sufficiently large to maintain the uniformity of the pressure at the outlet of the regulator by means of its connexion with a valve at the inlet, and small enough to pass freely through the collar over which the diaphragm is made fast.

3. The use of a valve on a case or covering for opening and closing the communication between the diaphragm and the atmosphere, which valve is open so long as the diaphragm or expanding chamber is in action or sound, but closes in case of rupture, thus preventing any escape of gas. This cover with valve is claimed as applicable to all other regulators or governors where an expanding chamber is used.

4. The arrangement for large regulators of a leather or other suitable diaphragm, as shown in the drawing; covering the leather with metal shields; and also the use of levers and counter weights, to neutralize the effect of gravity on the diaphragm.

5. The use of levers and weights, as shown in the drawing, for compensating excessive draught in large regulators. This arrangement is claimed as applicable to regulators and governors of any other description.

1091.—JOSEPH SOUQUIÈRE (called EMILE), of 29, Boulevard St. Martin, Paris, civil engineer, for "*A new or improved process of distilling coal.*" Patent dated April 30, 1859.

The claim is for—

1. The calcination or destructive distillation of a mixture of pulverized coke and coal in the manufacture of gas, for the purpose of obtaining a larger quantity of gas, and also to render the coke resulting therefrom of more value.

2. The calcination or destructive distillation in coke ovens of a mixture of pulverized coke and coal for the purpose of producing coke of greater density, which will also produce coke of good quality from any kind of coal.

PROVISIONAL PROTECTION

HAS BEEN GRANTED FOR THE UNDERMENTIONED INVENTIONS.

2150.—GEORGE DANNETT ROBINSON, 15, Church Street, Islington, London, for "*Improvements in apparatus for regulating the pressure of gas and other fluids.*" Sept. 21, 1859.

2310.—WILLIAM DICKSON HART, of Edinburgh, N.B., philosophical instrument maker, for "*Improvements in pressure regulating apparatus for gas-burners.*" Oct. 11, 1859.

2320.—JAMES CARRICK, hotel proprietor, Glasgow, for "*Improvements in commodes, water-closets, and other sanitary appliances.*" Oct. 13, 1859.

2322.—JAMES THOMPSON, of Notting Hill, in the co. of Middlesex, gas engineer, for "*An improved form of hydraulic valve and apparatus to be used in the manufacture of gas.*" Oct. 13, 1859.

2333.—JONATHAN RHONE, of Leman Street, Whitechapel, London, for "*An indicating meter-tap.*" Oct. 13, 1859.

2334.—WILLIAM PROSSER, of 24, Dorset Place, Dorset Square, London, gentleman, for "*Improvements in apparatus employed in the production of light.*" Oct. 13, 1859.

2346.—GEORGE GOLDSMITH, of Leicester, gas-meter inspector, for "*Improvements in gas-meters.*" Oct. 14, 1859.

2421.—JULIUS DAHLKE, of Providence Row, Finsbury, London, analytical chemist, for "*Improvements in the preparation of charcoal, and its application to the purification of water and the preservation of organic matters, and in apparatus connected therewith.*" Oct. 22, 1859.

2424.—ANDREW LINMERE DOWIE, of Glasgow, N.B., merchant, for "*Improvements in gas-burners, and in pressure-regulating apparatus for the same.*" Oct. 24, 1859.

2428.—RICHARD ARCHIBALD BROOMAN, of 166, Fleet Street, London, for "*Improvements in daylight and other reflectors, and in the method of supporting lamp reflectors.*" A communication. Oct. 24, 1859.

2445.—JOHN ZUILL KAY, of Dundee, N.B., gas engineer, for "*Improvements in gas-meters and in apparatus for maintaining or preserving the levels of liquids.*" Oct. 26, 1859.

NOTICES HAVE BEEN GIVEN OF INTENTION TO PROCEED WITH THE UNDERMENTIONED INVENTIONS.

1426.—Constantine Nicolaus Kottula, of Liverpool, soap manufacturer, for "*A means of cleansing or purifying the Thames.*" June 13, 1859.

2190.—William Collins, of Salford, Lancaster, engineer and brass-founder, for "*Improvements in stand-pipes for hydrants.*" Sept. 28, 1859.

Legal Intelligence.

BATH POLICE COURT.

THURSDAY, OCT. 27.

CONVICTION FOR DEFRAUDING THE BATH GAS COMPANY.

James Forrest and *John Forrest*, father and son, were summoned for having, on the 18th inst. and on many previous occasions, improperly and unlawfully used gas belonging to the Bath Gaslight and Coke Company. A second summons charged them with having laid or caused to be laid a pipe connecting the company's main with their premises, No. 13, Somerset Buildings, opposite Walcot Church.

Mr. Slack appeared for the prosecution.

The elder defendant pleaded guilty to both charges. The younger one said he knew nothing about it, and the case was therefore proceeded with as against him.

Mr. Slack said this was a prosecution by the Bath Gaslight and Coke Company, under an Act of Parliament, the 10th Vict., called the Gas Clauses Consolidation Act, which provides that every person guilty of either of the offences charged against the defendants—that of illegally attaching a pipe to the company's main, or of improperly using gas—shall be liable to a penalty of £5; and for the latter offence, in addition, a fine of 40s. for each day the gas is so used. The evidence would show that both the defendants had been guilty of a most aggravated breach of the Act. An application had been made to the company to lay on gas at 13, Somerset Buildings; but by a rule of the company a deposit of £1 had to be paid in such cases. The defendant did not comply with that regulation, and the gas was consequently not supplied; but the defendants, as he should show, had surreptitiously supplied a gutta percha tube to the main pipe, and had thereby enjoyed the use of the company's gas for a considerable period without tendering or paying any money for it. The fraud was discovered by an officer of the company, who, on going to the premises, found the outer shop-door shut; but, on gaining admission and going into an inner room, he saw a gaslight burning. Further investigation showed that the defendants had removed the cap and applied a tube to the pipe from which a former occupier of the premises had been supplied, and had thus been enabled to obtain a surreptitious supply of gas. There was no meter, and the company were therefore unable to say what quantity of gas had been consumed; but it was clear that the defendants had carried on the system very successfully for some time. The company therefore, for their own protection and the protection of the public, felt called upon to take these proceedings. There was another course open to the company if they had chosen, but which in mercy to the defendants they had not taken—namely, to have prosecuted them for felony. It was only in consideration for the elder defendant's family that they had not taken that course.

James Forrest: Thank you, sir; I feel grateful.

Mr. Slack then proceeded to call his witnesses.

Mr. *George Helps*, secretary to the Bath Gaslight and Coke Company, deposed that in May last application was made for gas to be supplied to No. 13, Somerset Buildings. Gas has not been supplied to the house for the last six years. When the application was made the person was informed that a deposit would be required. The amount required was £1. It was not paid, and consequently no provision was made for the supply of gas. The party who applied, he believed, was the son of James Forrest. The company had not knowingly supplied any gas to the house since. Their rule was to send their own men to fix their meters. In consequence of information, witness, on the 18th, sent two inspectors to No. 13, Somerset Buildings. On the following day James Forrest called at the office.

Mr. Slack was about to continue the examination as to the conversation that ensued, but as the other defendant was not present at the time, it could not be received as evidence.

Mr. *Wm. John Warner*, chief inspector to the gas company, deposed that on the 18th, about eight o'clock in the evening, he went, in company with another inspector, to the house, No. 13, Somerset Buildings. The outer door of the shop was fastened. Witness rang the bell, and the defendant, John Forrest, came to the door. Witness then observed rather a strong light in the parlour behind the shop. As the defendant came out of the inner room into the shop, he closed the door after him. Witness went through the shop into the inner room, where he found a gaslight burning from a single pendant. Mr. and Mrs. Forrest and John Forrest were in the parlour. Witness asked, "Where is your meter?" Mrs. Forrest became very pale, and reclined back in the chair apparently fainting. John Forrest said, "Don't be harsh with us; my mother is in a very delicate state of health," or something to that effect. Witness saw that the pipe was laid across the ceiling towards the shop, and also towards the back premises. Witness asked for a candle, and the son said they had none. Witness said he must have a light, and a piece of paper was then brought him lighted. He searched for the position of the meter, and found the part of the service-pipe which had formerly been attached to a meter. There was at that point a common main tap. When the supply of gas is discontinued, the meter is taken away, the main tap unscrewed from the pipe, and a plain cap put on.

James Forrest: Which was not done in this case.

Witness continued: He found a gutta percha tube attached to the main tap. From inspection, he came to the conclusion that it had been attached for a considerable time—for weeks at least. The tube communicated with the fittings. Witness asked the young man what fitter had done it, and he replied, "No fitter; we did it ourselves." Witness asked him "Where did you get the flexible tube from?" and he replied, "We bought it in Westgate Street." Witness turned off the gas at the tap, and the light in the inner room went out. Witness asked John Forrest, who was in the shop with him, what had become of the cap, but the defendant made no answer. He then asked him if he had nothing belonging to this (touching the tap), and he then went into the inner room and brought out the piece of pipe produced, and which appeared to be the pipe which formerly communicated with the meter. Mrs. Forrest said the gas had only been burning for a few days, and John Forrest said they had merely been trying an experiment.

Mr. *Daniel Helps*, meter inspector to the gas company, accompanied the last witness on the 18th. On the following morning he went to the premises again, and found four burners altogether—two in the shop, one in the inner room, and one in the back kitchen. The last appeared to have been more recently fixed than the others. They all communicated with the flexible tube. John Forrest was present.

Mrs. *Fanny Emming*, living in Somerset Buildings, deposed to having, just before last Whitsuntide, gone inside the defendant's premises, and that the gas was burning then.

Ann Maria Descom, dressmaker, living at No. 6, Ladymead, knew the defendants, and had been at work at their house. She went there on the last day of May, and worked in the parlour behind the shop. Gaslight was then used. She was there again in June, when she had to work all night. Gas burnt all night. She also worked there again in August, when gas was also burnt. She had frequently gone there since and seen gas burning. The defendant, John, had been present, and she had seen him light the gas.

Mr. Slack said though the case had been made out against the younger defendant, the prosecutors felt that however guilty he might have been (he was young and under age, being only 17), he must to some extent have been acting under the influence of his father, and therefore they would not press the case against him.

The elder defendant, upon being asked if he had anything to say why he should not be convicted, pleaded guilty, and then in lachrymose tones, went on to say that though he knew at the time that he was doing wrong, he did not think of the enormity of the evil and had acted inadvertently.

Major Baker (the presiding magistrate): I suppose you mean you did not think of the extent of the punishment?

Defendant: Yes, sir. He then went on to say that he had been twenty-three years in Bath; but this was the first time that he had broken the law, and he hoped the bench would be merciful. He had worked at the houses of silversmiths where gold, silver, and valuables had been within reach, but he had never had even the taking of a pin laid to his charge before. He mentioned the names of several respectable citizens, who, he said, could give him a character, and concluded by saying that he knew he had broken the law and he was willing to suffer for it; but he had done it inadvertently, and therefore threw himself upon the mercy of the court.

Mr. Slack said the company were not desirous of appearing harsh in this matter. Therefore, though the defendant had pleaded guilty, and it was clear that he had been using their gas for a long period, and was liable to a fine of 40s. for each day, they would be satisfied if he were fined for one day only, in addition to the penalty provided by the Act, and which the magistrates had no power to mitigate.

Major Baker, addressing the defendant, said the company had acted very leniently towards him. He had been guilty of a theft in stealing their gas. He was liable to a penalty of £5 for each offence, and to a fine of 40s. for every day he had used the gas. Therefore, as he had been proved to have burnt the gas for four months, the penalty to which he was liable was about £250. As, however, the company did not press it, he would be fined 40s. for one day, and have to pay in addition the penalty of £5 and costs for each offence; that would make £12 and costs.

The defendant said he was utterly unable to pay the money.

Mr. Slack said the alternative provided by the Act was three months' imprisonment in each case, but the company would be satisfied if the bench inflicted one punishment for both offences.

The defendant was accordingly committed for six weeks on each charge.

Miscellaneous News.

GREAT CENTRAL GAS CONSUMERS' COMPANY.

The Half-Yearly Ordinary Meeting of the Shareholders of this Company was held at the London Tavern on Friday evening, Oct. 28—Mr. Deputy Dakin in the chair.

The Secretary (Mr. Massey) read the notice convening the meeting, and the corporate seal of the company was affixed to the register of proprietors.

The Chairman then read the following report of the directors:—

Gentlemen,—Pursuant to the provisions of the company's Act of Incorporation, the directors have the pleasure of submitting to the shareholders the balance-sheets and half-yearly accounts, showing the results of the manufacture of gas and the working generally of the company for the six months ending Midsummer last. Both these statements have been printed and forwarded to each shareholder, and by them it will be seen that the sum available for dividend amounts to £5277. 6s. 10d., out of which the directors recommend that a dividend at the rate of 5 per cent. per annum be declared, payable, free of income-tax, on and after the 28th day of November next, amounting to £4304. This will leave a balance to be carried forward to the account of next half year of £973. 6s. 10d., after deducting a sum of £1000 towards the formation of a suspense wear and tear account, and paying £1130. 7s. 1d., being the balance due on account of former repairs. The result of the half year's working would have been more satisfactory had the late contractors left the works in proper condition. The amount of loss incurred by their default in this particular was referred to the arbitration of the Recorder of London and two engineers, who assessed the same at £2724, which has been duly paid, and is placed to the credit of the capital account until the cost of repairs is finally adjusted.

A coal contract for twelve months has been concluded on favourable terms, and the effect of the new supply of coals on the production of gas has been very advantageous.

Your directors have to announce with great regret the death of their talented engineer, Mr. Alexander Wright, to whose exertions during two years of great difficulties, the company is largely indebted. The various alterations and repairs designed by him and commenced under his superintendence have been carried to a successful termination. Your directors congratulate their shareholders on the present satisfactory condition of the works and plant, as attested by a report dated the 28th inst., made by Mr. Barlow, the well-known gas engineer, as follows:—

"42, *Parliament Street (S.W.), London, Oct.* 28, 1859.

"Gentlemen,—In compliance with the secretary's instructions, I have made a survey of the works at Bow Common, and have to report that since the company resumed possession of them upon the determination of their contract with Messrs. Prior in January last, the following improvements have been completed:—

"The west wall of the retort-house has been entirely rebuilt, and the whole of the walls and roof have been raised 6 feet.

"The framing of the roof has been thoroughly repaired and covered with new corrugated iron of No. 14 wire gauge. An efficient ventilator has also been added throughout the entire length of the ridge, which, combined with other measures taken for rapidly clearing the retort-house from smoke, has much improved the comfort of the stokers.

"The piers and arches of the western section of the retort-bed have been entirely rebuilt, with the exception of the end walls. Four of the ovens have been filled with new retorts, and three more ovens are nearly completed. In all of these ovens eleven retorts have been set instead of ten as formerly, and 10 per cent. has been thereby added to their producing power.

"The hydraulic main has been removed from the front and placed upon the top of the bed, and the rising pipes straightened.

"Six of the ovens in the eastern section of the retort-house have been similarly restored and improved, and a new wrought-iron hydraulic main fixed.

"The only portion of the retort-beds which remains in the state in which it was left by Messrs. Prior is the central section, which continues in fair working condition.

"Of the 237 retorts, or 474 mouth-pieces, contained in the three sections of the retort-bed, 150 retorts were in action on Saturday last, of which 146 were effective. Their condition was such as to yield about 9400 cubic feet of gas per ton of coal, and

4100 cubic feet per diem for each effective mouth-piece. Eighty-seven new retorts remained in reserve to supply the wants of the coming winter.

"A new lavatory and dining-room has been erected for the accommodation of the men employed on the works, who appear fully to appreciate its conveniences.

"The large engine and boilers, the exhausters and purifiers, have been thoroughly overhauled and put in a good state of repair. The condensers, station-meters, and gasholders, have not required any special repairs, and are all in good working order.

"The scrubbers recently erected by Messrs. Prior, for experimenting upon Mr. Laming's ammonia process of purification, are now doing good service as water scrubbers.

"The buildings generally (with the exception of the covering to the purifying-house roof) are in substantial repair, and the railway siding is in a fair condition for such a structure. The yard has been improved and cleared, and the roads put in good condition, so that the whole establishment has now assumed an appearance of order and cleanliness which it did not formerly possess.

"The station you are forming at No. 145, High Street, Whitechapel, for the purpose of more satisfactorily regulating the day supply of gas to your consumers, is in a forward state, and will, I doubt not, be found of great service in foggy weather.

"The result of my survey has been to satisfy me that your works at Bow Common are in an efficient state, both as it respects their capabilities for manufacturing all the gas required, and in their general substantial repair.

"I am your obedient servant,

"(Signed) THOMAS G. BARLOW."

"The Directors of the Great Central Gas Consumers Company,
28, Coleman Street."

The directors have pleasure in calling attention to the report of Dr. Letheby, presented to the Commissioners of Sewers in September last, which shows that the quality of the gas supplied has been of a very satisfactory description.

"*To the Honourable Commissioners of Sewers of the City of London.*

"Gentlemen,—In the course of the quarter which terminated on the 10th of August last, 246 experiments were made on the illuminating power of the gas supplied by the Great Central Gas Consumers' Company to the City of London, and the results are, that the average illuminating power has been equal to that of 11·51 sperm candles, or 13·15 wax standard value. The gas has been tested at two places, viz., at the laboratory of the London Hospital, and at Coleman Street in the City. At the former place the average for the quarter was 11·72 sperm or 13·40 wax, and at the latter 11·30 sperm or 12·91 wax; the mean of the whole being about 10 per cent. above the standard requirements of the Act of Parliament. I have also the satisfaction to report that the quality has been very uniform, for the weekly range has been but from 10·91 to 12·76 of standard sperm. In this respect, however, the gas has undergone great improvement during the last six months.

"The chemical quality of the gas has also been good, in respect of the total absence of sulphuretted hydrogen and the presence of traces only of ammonia and tarry matter. "I have the honour to be, Gentlemen, your obedient servant,

"(Signed) HENRY LETHEBY."

"*Sept.* 9, 1859."

The following statements of account having been previously circulated amongst the shareholders, were taken as read:—

BALANCE-SHEET, JUNE 30, 1859.

Dr.					*Cr.*				
To paid-up capital			£172,160	0 0	By cash at bankers, viz.:—				
Creditors on debentures			66,000	0 0	General account	£6,457	0 6		
Creditors			14,993	4 2	Dividend ditto	386	7 0		
Bills payable			12,626	15 2	Debenture interest ditto	19	2 6		
Dividends unclaimed to date			386	7 0				£6,862	10 0
Arbitrators' award, fifth instalment			517	10 6	Stock—coal, coke, stores, meters, &c., &c.			5,844	7 1
Interest on debentures			1,634	15 0	Gas rents and arrears, for quarter ending June 30.	£25,928	10 11		
Messrs. Prior—amount awarded by arbitrators for depreciation of plant	£2,724	0 0			Sundry debtors, for products, &c.	1,282	17 11		
Less expended on this head	803	7 6						27,211	8 10
			1,920	12 6	Land, works, and plant.	£214,242	8 4		
Revenue account, for balance to date			5,277	6 10	Preliminary expenses	20,602	14 7		
					Office furniture and fixtures	753	2 4		
								235,598	5 3
			£275,516	11 2				£275,516	11 2

REVENUE ACCOUNT, FROM DECEMBER 31, 1858, TO JUNE 30, 1859.

Dr.					*Cr.*				
To coals carbonized			£10,797	16 1	By gas rental for half year ending June 30			£29,720	15 8
Wages			5,451	4 6	Coke, tar, and ammoniacal liquor			5,158	5 7
Gas supplied by Messrs. Prior, &c.			3,709	7 4					
Interest on debentures			1,650	0 0					
Cartage, wharfage, general repairs, repairs of meters, tools, &c.			1,590	5 9					
Salaries			1,246	12 4					
Wear and tear, for amount carried to the credit of that account			1,000	0 0					
Rent, rates, and taxes			964	13 10					
Manufacturing stores			626	2 11					
Bad debts and allowances			530	8 4					
Directors			500	0 0					
Meter-fixing and paving			349	5 2					
Law charges			255	1 3					
Stationery			189	5 3					
Interest			188	16 7					
Chemical referees			65	0 0					
Corporation inspector			50	0 0					
Official auditors			42	2 0					
Meter-testing			12	10 0					
Balance carried forward			5,660	9 11					
			£34,879	1 3				£34,879	1 3
Renewing retort benches—for balance of that account	£997	16 1			Balance brought forward			£5,660	9 11
Engineers' charges	132	11 0			Ditto from last revenue account, as per official auditors' statement			6,951	16 7
			1,130	7 1					
Arbitrators' award, fourth instalment	£522	6 1							
Ditto, fifth instalment	517	10 6							
			1,039	16 7					
Dividend declared April 29 last			5,164	16 0					
Balance, being net profit carried forward			5,277	6 10					
			£12,612	6 6				£12,612	6 6
					Balance brought down, being amount available for dividend			£5,277	6 10

The CHAIRMAN: Gentlemen,—In moving the adoption of the report, I feel that there is no necessity for me to address any lengthened observations to you, for the report itself has been so explanatory of the proceedings of the company during the last six months, that whatever I might say to you would add but little to your present information upon them. I am sure that you must all join with us in feeling that it is very satisfactory for the first time in the history of this company to know that it has its works in its own hands, under its own control, and in a perfect state of repair for the public service for which they were designed. The report of Mr. Barlow, than whom no man's opinion can be more valuable or more conclusive, must have served to convince the shareholders upon the question of the present efficient state of our plant. Mr. Barlow was an intimate friend of our late lamented engineer, Mr. Wright, and, previous to his decease, he was accustomed to call in Mr. Barlow upon any question of reference in which he required advice. The name of Mr. Barlow was therefore suggested at once to the directors as that of the gentleman most fitted to fill the void which the death of Mr. Wright has unfortunately left in our counsels and direction. I cannot pass over the name of Mr. Wright without bearing my most hearty tribute to his general merits as a professional man, and to his uniform uprightness of conduct as a gentleman, in whatever respect we had to deal with him. You will perceive from the report of Mr. Barlow, that the retorts—the most important part of a gas plant—are in an almost perfect condition—that is, that the whole of them, with the exception of the central section, are entirely new, both the arches and the settings of the retorts. And I would call attention to the fact that that central section, which has been left by Messrs. Prior, is about a year old, in good condition, and will do service for two or three years to come. But yet, with regard to that, we have to the credit of the capital account a sum of £2794, less £803 already expended in repairs of the plant. Therefore, taking the present condition of the retort-house, as certified by Mr. Barlow, with the amount in the balance-sheet for the complete restoration of the other part, this important portion of our works and plant may be taken as almost new, which is, as I said before, a very satisfactory state of things. The remarks of Mr. Barlow with regard to the lavatory which the directors have caused to be built, together with a room for the workmen to take their meals in, I may state are fully borne out, and that the experiment has been attended with very good results. We feel, and I am sure that every person connected with the labour of this country feels, a great desire to render the laborious operations of the artisan classes—especially such as are connected with a calling like that of gas manufacture—as comfortable and easy and as little oppressive as possible. Until lately our men—numbering very often more than two hundred—had very imperfect resources for cleanliness, as well as for keeping their clothes and eating their food, during their hours of labour at Bow Common. We thought it wise, therefore, to erect a spacious lavatory, and over that a place where the day and night men can get their meals in comfort. Each man has a separate locker, with lock and key, to keep his clothes in; and when we visited the works last week it was delightful to see how pleased they were with the arrangement thus provided for them. I assure you it was as gratifying to us as it was to them. I believe that there is no better way to prevent strikes and to have our work well done than by paying proper attention and regard to the condition of our workmen. Another important addition to our works, and which is alluded to in Mr. Barlow's report, is that of the station at Whitechapel. We have always felt some difficulty with regard to our works on the occurrence of fogs or any other contingency necessitating a sudden demand for gas in the City before we could communicate with the works at Bow Common. By the arrangements now made at this governor-station—as we term it—we can have all the pressure of the works brought down to the station at Whitechapel, and by valves and governors we can regulate the pressure from there to the City, instead of from the works. This important arrangement is now complete, and in the course of a week or ten days it will be in action, diminishing to a very large extent the inconvenience which we must sometimes feel, arising from the distance between the works and the City. I may state that, during the time we have had the works in our own hands—with the exception of one slight occurrence on Sept. 26, owing to a very sudden fog which came on, and lasted for about half an hour, and also with the exception of the accumulation of naphthaline in the pipes during the last three days, and which other companies as well as our own have suffered from—we have had comparatively no complaints of the efficiency of our operations. Dr. Letheby has informed you that the quality of our gas has been uniform, and we have had such uniform pressure that, while sufficient for all purposes of illumination, there has been no waste in the working. I must at this stage state that the directors feel every satisfaction with the gentleman (Mr. Harris) who has been entrusted with the managership of the works at Bow. He was a pupil of our late engineer, Mr. Wright, who gave us a strong recommendation with him as his own pupil, and one brought up under his own eye, which was to us a guarantee both for his professional knowledge and general character. I am bound to say that the recommendation so given has been borne out by the attention he has bestowed, and the manner in which the works have been conducted. The report of Dr. Letheby states one very important fact respecting a matter which, until we had the works in our own hands, we were not able to attend to:—I allude to the uniform quality of the gas. I say it

is an important matter, for though in practical working we may sometimes have gas of a high illuminating power, if on other days we have the quality unusually depressed, it is not enough to say that the average of the two brings the gas up to the parliamentary standard. What we want as manufacturers, and what the public require as consumers, is one uniform standard of illuminating power; and as that is what we have paid great attention in order to attain to, it is very satisfactory to have Dr. Letheby's report to prove that in this matter we have accomplished our wishes. And now with regard to another important matter, that of cost. The half year of which you have the accounts before you, ending June last, is a fractional half year. During the first month, January, we were supplying gas purchased from our contractors, Messrs. Prior. The remaining five months, during which the directors have manufactured for themselves, have been five months of imperfection, arising from the state in which the works were left, and also through some drawbacks connected with the coal which Messrs. Prior had on the works, which, under contract, they supplied us with, and which were not of that quality which we were subsequently fortunate enough to secure. Looking, therefore, at the cost of gas for the six months ending the 30th of June last, you must take into account these exceptional circumstances; but I may tell you that, as nearly as may be, the cost of the gas at the consumer's meter has been about 2s. per 1000—*i. e.*, as compared with 1s. 9d., which was the price we formerly paid to our contractors. I may likewise be permitted to state that the experience we have had since the termination of the half year to June last, and with the new coal contract which we now possess, has been to lead us to hope that the manufacturing price of gas at the consumer's meter may come very nearly to the contract price that we have hitherto paid—that is, I believe, the cost of gas up to the 30th of June has been from 2d. to 3d. in excess of what it has since been under more favourable circumstances. It is very early yet to make any statement of this kind, but I believe if these circumstances continue, we shall be enabled to manufacture gas with as much economy as we have hitherto purchased it at, and we shall have that which is the most important of all, the satisfaction of having the complete control of our own works, and be able to manage them without the disasters we have all had to lament during the last two or three years. In looking to the accounts generally, you will perceive, of course, if you turn to the debit side of the balance-sheet, that in the matter of "Creditors on bills payable," there is a large increase. The amount for the half year ending June, 1858, was "Creditors on bills payable, £8219. 14s. 5d.;" it is now £14,993. 4s. 2d. But upon that I may remark that £4000 of this amount was a sum in transit, being due to payments on debentures falling due, and was at that time at the bankers, where you find the balance of general account was £6457. The necessity for having some larger working capital than we have hitherto had, in one shape or other, will be evident when I state that every week we have to pay upwards of £200 for wages. This is a matter which will make the figures of our balance-sheet somewhat larger, though we shall get it on the other side, and if we can manage to carry on the manufacturing account without coming upon you for more capital—although we may have to get occasional loans—we feel that it will be better than calling up more shares. You will also find in these accounts an item of "Arbitrators' award, fourth instalment." I am happy to say that we are getting on a little with that disagreeable item—I mean the payment to Mr. Croll under that award. You will find that this half year we have to pay the sum of £1039. 16s. 7d. on that account. This is the second year of the £2000 a year that we have to pay to Mr. Croll. In 1860 we shall have to pay £2000 more, and then will follow three comparatively light years of £1000 each, which will finally extinguish that which we feel to be a heavy load upon our necks. So long as it exists, however, it is put in its proper place, to the debit of the revenue account. The sum available for dividend on the present occasion extinguishes that amount as well as a former claim for renewing retort benches, and likewise the £1000 which, by vote of last year, was to be set aside to form a wear and tear account, to be kept up at the rate of £2000 a year. The addition to "Land, works, and plant," during the year has been £5758. 7s. 2d., and this consists of the following items:—Two exhausters and by-passes, £913. 5s. 6d.; new chimney, £521. 16s. 6d.; new coal stores, £937. 5s. 1d.; mains, services, and meters, £196. 4s. 9d. That is from June to Christmas, 1858. From Christmas to June last the following additions have been made:—Casing to engine cylinder, £20; items taken from Messrs. Prior, being a part of their manufacturing stock, consisting of tank, engine, ammonia apparatus, purchased at valuation, £1582; scrubbers, £1100 (which I may say in passing will almost double the production of ammoniacal liquor, and so, by the increased production of that article, in two years will in probability pay the entire cost of that addition to the plant); the governor and valves at Whitechapel, £87. 8s.; engineer, £167. 16s. 7d.; and mains, services, and meters, £477. 13s. 3d.,—making the total addition I mentioned of £5758. 7s. 2d. I cannot pass over the reference in the report to the new station at Whitechapel without paying a compliment to my friend Mr. Warren, who is one of your directors, and, being locally acquainted with that district, took upon himself the duty of finding a house which would be fit for the purpose. Fortunately, he succeeded in getting exactly the place we wanted, and by the consent of the parish we have got our pipes conducted into it under the broad flags of the pavement. Since we have taken the house and occupied the part required for our purpose, Mr. Warren has succeeded in letting the remainder for the entire sum we originally paid for it, the tenant paying the rates and taxes; so that I consider we have been enabled to take a most important step in a very economical manner through the assistance of our director, Mr. Warren. With regard generally to the rental, you will find that the rental for the whole year of 1858 was £58,431, while the rental for the past half year ending in June was £29,720. Doubling that will make £59,440, being a gain of something more than £1000. But during our embarrassment last year, and while the contractors were not carrying on the work in an efficient manner, we lost a considerable amount of rental, which we have had to replace by new rental; this we succeeded in doing, as well as increasing it by £1000 upon the rental of the former year. I have no doubt that with the steadiness and uniformity of working which will in future distinguish our operations, we shall not have to report to you that we have been losing consumers, but that we are steadily gaining ground, and making uniform additions to the rental. To do so will be the continual and consistent endeavour of the directors, and in that they trust they will be assisted by the shareholders. Of course, as you know, a very important point has been gained now; we are carrying out our operations upon the principles of our Act of Parliament, and we shall endeavour, to the best of our ability, to serve the public with gas at 4s. per 1000. At the same time, there is a corresponding right which you—the shareholders—have, and we ought not to supply gas at 4s. unless we can get a fair average dividend. This experiment is being tried, and the result must depend, on the one hand, upon the economy with which we carry on our works, and, on the other, upon the support which we receive from the public whom we serve in serving our shareholders. I do not know that I have any further remarks to make to you, except that the dividend proposed of 5 per cent. will enable us to carry over nearly £1000—a handsome amount—to the next half year. This sum of £5277 would have admitted of a 6 per cent. dividend, but we recommend you to be content with 5 per cent. for the past half year, and to trust to our exertions in the present to see whether we cannot get you a better one on the next occasion, so as to equalize that which is, I believe, below what a gas company ought to be capable of yielding. With these remarks, I beg to move, "That the report be adopted, and that a dividend for the half year at the rate of 5 per cent. per annum, free of income-tax, be now declared."

Mr. KERRY: With respect to the report which you have been pleased to call explanatory, and in which expression I entirely concur, I take the liberty of asking whether there would be any objection in future to print the report with the balance-sheet, and circulate it amongst the shareholders before the meeting. I know that it is the custom with many gas companies, and I think it would be satisfactory to us to be able to look over it before coming here. I do not know that, on the present occasion for instance, it would have been necessary to print the reports of Dr. Letheby and Mr. Barlow, but simply the directors' own report. I strongly recommend that it should be done in future, if you see no objection to it.

The CHAIRMAN: It is a matter which is entirely with the shareholders. If it is their wish that it should be the case, the directors can have no objection to carry out the suggestion. The only question is that which has been before considered by the shareholders—namely, the expense. Hitherto they have been satisfied to hear the report read at the meeting in which it has been discussed; but, as I said before, it is entirely a matter in their hands, and if it is their wish to have it printed and circulated beforehand we have no objection to it.

Mr. KERRY: I think the expense would be very little if it were printed on the same sheet with the accounts. I am quite sure that the shareholders would not object to that trifling additional cost, but if they did I should have no objection to pay it out of my own pocket.

The CHAIRMAN: Allow me to ask whether you think, if you had the directors' report apart from the report of the engineer, it would convey more information to you than could be obtained from the balance-sheet alone.

Mr. KERRY: I have no objection to have both. I do not wish to exclude the engineer's report.

The CHAIRMAN: I think it should be a complete report or none at all; and then comes the question of the expense of printing a considerable document like this—that is the only point. It was considered by the shareholders at one time and decided with that in view.

Mr. WATSON: This is the first meeting of the company that I have attended, and this is the first report of your proceedings that I have ever heard read. It struck me while you were reading, that the report was deficient in one respect. In other meetings that I have attended, the gentleman who occupies the place which you now fill has generally had his name appear in the report, as well as those of his brother directors. The accounts, too, have generally been signed by the auditors. It seems to me as if that were a very desirable course, because it gives confidence to the public without adding to the expense of the report.

The CHAIRMAN: I think the latter part of your suggestion, about the auditors signing the accounts, is a very judicious one; but we come under an Act of Parliament which provides only for a yearly auditing of the accounts. On the next occasion of our meeting you the accounts will be signed by the official auditors. This is merely an intermediate balance-sheet which the auditors do not see, and is therefore merely signed by the secretary, and it will be taken up again next half year. We have no objection to the other part.

A PROPRIETOR: I beg to propose, as an amendment, that the issuing of the directors' report in a printed form be postponed, on the score of expense, until the company is in a condition to divide 10 per cent. among the shareholders.

The amendment having been seconded,

Another PROPRIETOR said he thought it desirable that the report should be printed and circulated before the meeting, as it might prevent the necessity for some of the shareholders to attend for the purpose of informing themselves as to the position of the company.

Mr. WATSON suggested that the objection to printing the report on the score of expense might be met by agreeing to print the report in an abbreviated form.

The CHAIRMAN: It must be the whole report or none at all.

The amendment was then put and negatived, and the original motion—to which were added the words, "and that the directors be requested in future to have the report printed and circulated with the accounts"—was carried almost unanimously.

The CHAIRMAN: Gentlemen, I have great pleasure in stating that our business has terminated. I cannot help, however, expressing a hope that the circulation of the report in future will not have the effect of inducing shareholders to stay away from our meetings. Our motto has hitherto been, "Union is strength;" and I hope the shareholders present will exert themselves in that which is a very important matter at this time, when we have the works in our own hands, and are carrying out fully the original design for which the company was projected. We are encouraged to hope that they will do all in their power to obtain for us new customers, because we have now the means of supplying any quantity of gas which may be demanded of us in a perfectly satisfactory manner and of good illuminating power. We hope, therefore, that you will fully act out our motto, that "Union is strength."

Mr. WATSON: May I ask whether you have any private consumers now who are supplied with gas without meter?

The CHAIRMAN: No, not one.

Mr. KERRY: I should like to make a few remarks upon the figures of the balance-sheet.

The CHAIRMAN: I am afraid you are too late to open that up again; but any remarks you may wish to make we shall be happy to hear.

Mr. KERRY: You have cleared up one matter to my mind in your opening speech, for I had intended to scold you for having too much money at the bank. But with regard to the observation you made, that you had about £200 weekly to pay away in wages, and that therefore you should require some additional capital, and probably have to make a call, I would suggest—and you will perhaps take it in the spirit in which I offer it—that you should endeavour to make some of the figures on the credit side of the balance-sheet a little less than they now are. The book debts, for instance, during the last half year have very much increased, the arrears being in excess of the previous half year £3000. There is a great objection, of course, to this state of things, because it blocks up capital which you require to pay wages with, and renders the company liable to make a considerable number of bad debts. There is also the stock which you hold—I see that is more than double what it was for the corresponding half year. I apprehend the answer to that will be that you have had to buy a considerable quantity of coals, and of course that cannot be remedied. But I think the £3000 augmentation of arrears of gas rental, and debtors for products £1282, making together nearly £5000, might be advantageously looked into, with a view to bring the figures

a little nearer to what they have been. If you could keep the book debts and stock at anything like the same amount they were for the corresponding period of last year, you would be in possession of ample funds without calling upon the shareholders or effecting loans.

The CHAIRMAN: I am quite sure that the wisdom of the advice which Mr. Kerry gives, to employ as little capital as possible, and to get the debts in as early as possible, is so obvious to every shareholder that no comment is necessary; and I will only say that your directors have endeavoured in every way to accomplish it. With regard to the stock, that is inevitable; if you manufacture gas you must have coals in hand, as well as coke and other products on the works, till you can dispose of them. Of course, while we were supplied by contract we had no such items, but now they must always appear in our accounts. In reference to the other matter, I may state that it has attracted the directors' attention, and they have been earnestly labouring that question. They have had the collectors before them every week, and have gone carefully through their accounts; but I must state, and I state it with great regret, that the gas consumers of the City are some of them slow to pay their debts. We lay it down as a rule with our collectors that they should never have two quarters in arrear, because we know that in private matters it is the fruitful source of bad debts. But there is that state of competition in the supply of gas going on, that some of our customers—some whom I could name to you—say, "Well, if you press us, or if you will not give us that credit which the competing company will, we shall take our supply from them." The rental from some of these parties is £200 or £300 a year, and it is a great temptation to us to give credit to them rather than lose their custom. Still, on the other hand, you must have a certain amount of firmness, or you will very much increase the amount of bad debts. The matter has been frequently discussed at our board, and it is one of very great difficulty—for, on the one hand, we do not wish to lose our customers, and, on the other, we are desirous not to make a bad debt; how to steer the true mean often puzzles us very much. There is another matter, too, which sometimes attracts our notice. The large consumers of the City are not content to have meters free and gas at a low price, but they ask which company will do the most internal fitting for them. That is a very unfair position to take, but such is the case; and I assure you that this question and some others have pressed upon us the consideration whether it would not be wise for us, and better for the public at large, if some districting arrangements were made. If we cannot get in our money readily, and one company is to be played off against another, and these kind of advantages are to be taken, it becomes a serious question whether there should not be some amount of protection for us. A committee of the House of Commons has reported that the true mode of supplying gas to the public is, under proper limitations, by means of districting. If this were carried out, you would avoid these two evils; one company could not be put in competition with another, and consumers must pay their gas rental, because they cannot play off one company against you. It may come to that. The gas inquiry is now going on in the House of Commons, and the committee have reported that. With regard to the other view of the question, where you have competing companies, you must have the streets constantly broken up and disturbed; whereas, if there were but one company in a district, supposing it were placed under proper restrictions as to price, dividend, and illuminating power—the pressure, quality, and other matters regulated—these evils would be avoided, and in this way a great deal of the argument against districting would be met. The question of bad debts has been before us, and we have given a considerable amount of attention to it. We have lost some large consumers because we would not give in on the point of supplying internal fittings—consumers of £200 or £300 a year rental. The honourable proprietor may depend upon it we are not insensible to the matters he has suggested; all we wish is that we had a more perfect machinery to enable us to avoid making bad debts.

On the motion of Mr. KERRY, a vote of thanks to the directors was unanimously adopted.

The CHAIRMAN acknowledged the vote, when the proceedings terminated.

EDMONTON AND TOTTENHAM GAS COMPANY.

The Half-Yearly Meeting of the Shareholders of this Company was held at the London Tavern on Wednesday, Oct. 26—Mr. BLACK in the chair.

Mr. BRICKWELL, the managing director, read the following report and statement of accounts:—

In presenting this their twelfth annual report on the affairs of the company, the directors have much pleasure in being able to congratulate the proprietors on the changed position of the company. It will be in the recollection of the shareholders that at the last meeting the directors were empowered to apply to Parliament for an Act to extend the operations of the company, and to limit their liability; this the board took immediate steps to carry into effect. They are happy to say their application was successful, and the company is now duly constituted by Act of Parliament, and the present is the first meeting held in the terms of the new Act.

One of the provisions of the said Act enables the company to extend its lighting to the parish of Hornsey, and the directors intend to avail themselves of such privilege as soon as they are satisfied that the extension will prove remunerative. It is proposed to carry mains to Wood Green as early in the spring as the weather will admit of the necessary work being performed. The latter extension your directors believe will be amply remunerative.

It will be seen from the accounts of the operations of the company for the past year now presented, that it has been found necessary to appropriate a portion of the reserved fund towards paying the usual amount of dividend which your directors now recommend, namely, at the rate of 8 per cent. per annum, less income-tax.

The various causes which operated in lessening the profits for the past year the directors assure the proprietors will, they trust, not be felt in the working of the current year. The reduction in the price of gas and the low price of coke were the chief drawbacks in the profit and loss account. It will, however, be gratifying to the shareholders to learn, that since these accounts were made up, the requirements for gas both for public and private lighting have largely increased, and the directors believe that the temporary deficiency exhibited in the present accounts will be amply compensated for by the result of the operations for the current year.

The balance remaining on the reserved fund the directors consider cannot be better disposed of than being placed to the credit of doubtful debts, which sum will be found amply sufficient for the purpose up to the present time.

The new Act states, the directors of the old company shall be the first directors of the new company, but it is necessary that two of such directors be re-elected at this meeting.

A. A. Croll, Esq., and Wm. Black, Esq., are the gentlemen offering themselves for re-election.

The auditor who now offers himself for re-election is Robert Laing, Esq. All these gentlemen are duly qualified under the new Act.

The dividend declared at this meeting will be paid on the 10th of November next, by warrants as heretofore.

Dr. GENERAL BALANCE-SHEET, FOR THE YEAR ENDING JUNE 30, 1859. *Cr.*

To capital stock issued—5000 shares at £4 each	£20,000	0	0	By amount expended on works to June 30, 1859		£25,569	6	11
Liabilities, and amount due to sundry persons	2,516	3	2	Stock on hand—				
Loan—mortgagee	4,700	0	0	Coals	£ 32 16 3			
Dividend unclaimed	13	6	7	Coke, breeze, and tar	48 2 6			
Balance of profit and loss	831	0	8	Sulphate of ammonia	12 0 0			
						92	18	9
				Amounts due to the company—				
				Gas rental, &c.	£2,248 0 0			
				Coke and breeze	17 6 0			
						2,265	6	0
				Cash—balance at bankers, June 30, 1859		132	18	9
	£28,060	10	5			£28,060	10	5

Dr. REVENUE ACCOUNT, JUNE 30, 1859. *Cr.*

To cost of coal carbonized	£2,302	5	10	By gas rental, for one year	£4,416	7	7
Wages paid	607	17	8	Coke, sales, &c., ditto	1,099	5	4
Purifying materials	40	16	11	Sulphate of ammonia	24	12	10
Sulphuric acid	14	15	5	Siding, and profit upon coal	38	16	8
Rates and taxes	90	10	5	Sale of lamp columns and fittings	105	17	6
Wear and tear, general	389	3	4	Discounts	2	10	8
Ditto of retorts	120	0	0				
Printing and stationery	13	19	6				
Rent of siding	60	10	4				
Incidental expenses of trade—lamp columns and fittings	166	12	2				
Salaries	400	0	0				
Balance—profit	1,500	19	0				
	£5,707	10	7		£5,707	10	7
Proposed appropriation:—							
Paid—Half year's dividend and interest on loan to Dec. 31, 1858	£ 887	1	1	Profit for the year ending June 30, 1859—brought forward	£1,500	19	0
To pay—Dividend for half year and interest on loan to June 30, 1859	831	0	8	Balance of suspense account at June 30, 1858	342	8	8
Income-tax paid	20	16	8				
Amount reserved for bad debts	104	9	3				
	£1,843	7	8		£1,843	7	8

The CHAIRMAN, in moving the adoption of the report, referred with satisfaction to the position of the company, and the facilities they possessed for extending their business. It was very gratifying to observe that though they had reduced the price of gas to their consumers, they were able, after reserving the usual amount for contingencies, to maintain the same rate of dividend which they had hitherto paid. He anticipated with confidence even better results for the future, believing that the prospects held out by the report would be fully realized.

Mr. SAMUELS seconded the adoption of the report.

Dr. LIDDELL inquired what the present liabilities of the company were? Considerable expenses, no doubt, had been incurred in obtaining their Act of Parliament, and other matters.

The CHAIRMAN said the expenses attending their application to Parliament had not exceeded £600, which was quite within the estimate of the directors. That Act of Parliament enabled them to extend the circle of their operations, and he hoped they would have the support of the shareholders should any more money be required for the purpose. The capability of their works was three times what it formerly was, and he did not know of any company in London or the suburbs which stood in so good a position as they did. In answer to further questions by Dr. Liddell, the chairman said that the figures of the account did not represent the whole sum which the company made by the sulphate of ammonia, because they had a quantity of that material in stock. The advantage which the company derived by the railway siding was in the diminished cost of conveying coals to the works. The item of £38 profit on coal was not large, because the company had ceased to sell that article, finding better employment for their men and capital.

Mr. SCROTTON inquired what benefit their Act of Parliament was supposed to confer upon them?

Mr. CHILD (the company's solicitor) explained the benefits which parliamentary incorporation gave to a company, and mentioned that in their own case it conferred upon them the exclusive right of supplying Hornsey with gas.

The motion was then put and carried unanimously.

Mr. BRICKWELL moved—"That a dividend at the rate of 8 per cent., less income-tax, be now declared out of the profits of the company for the half year ending June 30 last, payable on and after the 10th of November." The motion having been seconded, was adopted.

The retiring directors, Messrs. Croll and Black, and the retiring auditor, Mr. Robert Laing, were severally re-elected.

The CHAIRMAN and Mr. CROLL returned thanks, and Mr. BRICKWELL apologized for Mr. Laing's absence on business connected with the company (Independent), of which he is engineer.

A long conversation ensued on a motion for increasing the remuneration to the directors, which ultimately was acceded to.

Dr. LIDDELL suggested the propriety of notice being given in the circular convening the meeting, of all the business which it was proposed to submit to the proprietors, and intimated that on the next occasion he should move a resolution on the subject; but after some explanations by the solicitor, as to the provisions of the Act of Parliament, he expressed his intention not to do so.

A cordial vote of thanks to the directors terminated the proceedings.

CHARTERED GAS COMPANY.

The Half-Yearly Court of Proprietors was held at the company's office, Horseferry Road, Westminster, on Friday last, the 4th inst.—BENJAMIN HAWES, Esq., the governor, in the chair.

The SECRETARY (Mr. Burls) read the advertisement convening the meeting, and also the minutes of the last half-yearly general and special courts.

It was then resolved that the following report of the court of directors, with the auditors' report and the statement of the accounts of the company, having been previously transmitted to the proprietors, be taken as read.

Gentlemen,—Annexed you will receive a statement showing the financial position of your concern at Midsummer last, which has been duly audited.

The few remarks your court of directors have to make on the commercial aspect of your establishment, admit of little variety, its progress being so uniform.

The rental for gas during the half year has increased by nearly £3000; but the sum realized by products has diminished in a more than equal degree.

The proceedings commenced by the committee of parish delegates in the last session of Parliament will, it appears, be continued. For this your court of directors are fully prepared, and they have entire confidence that the Legislature will not be misled by appeals, which exclude from consideration many most important elements of expenditure, and compare only the charge for gas with the price of coals.

The amount of dividend recommended for your adoption on this occasion is at the rate of £8 per cent. per annum, free of income-tax, the warrants to be transmitted in the usual way.

PROFIT AND LOSS, FROM DECEMBER 25, 1858, TO JUNE 24, 1859.

Dr.			*Cr.*		
To coals consumed in the half year, including labour		£47,553 14 8	By rental of light for the half year		£97,515 3 4
Stores, &c., used in the half year, viz.:—			Coke and breeze, deducting labour, viz.:—		
Retorts and setting, including labour		2,120 3 11	Coke	£13,354 17 3	
Lamps and lamp lighting, ditto		1,885 6 6	Breeze	354 10 3	
Carrying on the works		3,043 11 4		13,709 7 6	
General wear and tear and mains, including £1688. 18s. charged as the proportion for this half year of the balance of new works	£10,374 8 0		Tar and other products, deducting labour		1,920 3 1
Less received for old and burnt stores	923 6 0		Discounts and abatements allowed by tradesmen for cash payments		1,473 1 9
		9,451 2 0	Poplar station rent account, balance		12 4 10
Meters and fixing, including labour		2,614 0 6	Rents received		346 6 4
Paving		867 13 7	Dividend on the contingent-fund—viz., on £15,865. 4s. 5d., Reduced Three per Cent. Annuities		233 0 5
Directors and auditors		1,248 9 0	Interest		8 11 11
Salaries and commissions		4,932 3 10	Dividend on £5188. 1s. 4d., Consolidated Three per Cent. Annuities		76 4 0
Wages and contingencies, viz.:—					
Wages	£9,936 4 8				
Contingencies	915 11 2				
		10,851 15 10			
Rent and taxes, viz.:—					
Rent	£ 422 11 0				
Taxes	2,405 6 0				
		2,827 17 0			
Income-tax		642 18 6			
Law and parliamentary expenses		260 18 4			
Annuity to Mr. J. Cowell, late accountant		65 0 0			
Sick and benevolent fund		130 0 0			
Debts due at the stations, being bad written off	£1,157 10 4				
Received on bad debts	12 4 5				
		1,145 5 11			
		£89,640 0 11			
Balance		25,654 2 3			
		£115,294 3 2			£115,294 3 2

BALANCE-SHEET, JUNE 24, 1859.

Dr.				*Cr.*			
To 1st, 2nd, and 3rd capitals, after deducting the amount of 150 shares purchased			£592,500 0 0	By amount due to the company, viz.:—			
Fourth capital			60,000 0 0	For rent of light at the several stations, viz.:—			
			£652,500 0 0	Westminster station		£31,075 15 8	
Expended, viz.:—				Brick Lane ditto		11,726 4 5	
Westminster station—				Curtain Road ditto		6,123 0 10	
Balance at Christmas	£370,387 13 6					£49,525 0 11	
Expended this half year, viz.:—				For coke and breeze sold at the stations, viz.:—			
For new sulphate apparatus	£ 295 7 9			Westminster station	£ 609 12 8		
For new wall, Holywell Street	90 5 7			Brick Lane ditto	1,124 6 5		
For districting expenses	174 6 2			Curtain Road ditto	416 18 6		
		559 19 6				2,150 17 7	
		£370,947 13 0		For tar and other products sold at the stations		106 0 10	
Brick Lane station—				Balances of sundry accounts due to the company		1,029 2 6	
Balance at Christmas	£152,516 1 7			Treasurer's accounts, viz.:—			
Expended this half year, viz.:—				Balance of general account	£11,110 13 0		
For new mains, less value of old mains	1,143 4 1			Ditto dividend ditto	395 8 0		
		153,659 5 8				11,506 1 0	
Curtain Road station—				Bills on hand not paid		157 11 10	
Balance at Christmas	£63,432 5 4			Cash advanced to pay wages at the stations		840 0 0	
Expended this half year, viz.:—				Stores on hand, viz.:—			
For purchase of freehold property	£ 306 0 0			Westminster station	£3,555 5 10		
For new mains, less value of old mains	103 10 1			Brick Lane ditto	2,167 0 10		
		409 10 1				5,722 6 8	
		63,841 15 5		Coals on hand, viz.:—			
			588,448 14 1	Westminster station	£13,215 3 6		
			£64,051 5 11	Brick Lane ditto	5,097 2 8		
Dividends remaining unpaid			5,922 2 0	Curtain Road ditto	1,342 3 10		
Debts due by the company for coals, and to sundry tradesmen and others			6,873 8 4	On shipboard	1,404 8 1		
Amount due to collectors for commission, viz.:—						21,058 18 1	
Westminster station		£ 483 19 10		Coke and breeze on hand, viz.:—			
Brick Lane ditto		219 5 10		Westminster station	£ 60 13 3		
Curtain Road ditto		100 8 10		Brick Lane ditto	27 17 2		
		803 14 6		Curtain Road ditto	38 8 4		
Amount due for wages and contingencies, viz.—						126 18 9	
Westminster station		£ 336 7 1		Tar and other products on hand		300 14 2	
Brick Lane ditto		155 9 11		Ship *Dispatch*		780 10 2	
Curtain Road ditto		70 0 6		Amount invested in the purchase of £5188. 1s. 4d. Consolidated Three per Cent. Annuities		5,000 0 0	
		561 17 6		Overend, Gurney, and Co.		6,000 0 0	
Amount due at chief office for contingencies		2 2 1		The contingent-fund, invested in the purchase of £18,055. 5s. 2d. Reduced Three per Cent. Annuities		17,055 18 0	
Balance of profit and loss, viz.:—				New works, balance at Christmas	£2,256 19 8		
Balance to Dec. 25, 1858	£25,472 6 7			Less amount charged to profit and loss	1,688 18 0		
Less half year's dividend on £652,500	24,468 15 0					568 1 8	
		£1,003 11 7					
Profit of the half year ending Midsummer, 1859		25,654 2 3					
			26,657 13 10				
Contingent-fund			17,055 18 0				
			£121,928 2 2				£121,928 2 2

Mr. RHODES moved the adoption of the report and accounts, and made inquiry respecting the item of "Taxes £2405," as it seemed to him an unusually high amount.

Mr. TAYLOR seconded the motion.

The DEPUTY-GOVERNOR (Mr. Beck), in reply to Mr. Rhodes, said that the company's rates in every parish had been raised, in some instances most exorbitantly.

The SECRETARY said the company had delayed the payment of these excessive rates, and ultimately paid them under protest.

Mr. RHODES inquired whether there was any other charge to be brought into account for the new sulphate apparatus.

The DEPUTY-GOVERNOR replied in the negative.

Mr. RHODES made further inquiries as to the districting expenses and the item "For purchase of freehold property, £306."

The DEPUTY-GOVERNOR said it was not in his power to say when the whole of the expenses incident to the districting would be disposed of, and as to the second inquiry of Mr. Rhodes, the £306 was merely a deposit on account of some freehold property at the Curtain Road station, the purchase of which was not yet completed. In reply to further questions the deputy-governor said, the amount of £5000 invested in Consols was surplus money, which the directors did not require; the £6000 at Overend and Gurney's was money deposited at interest; and the £17,000 was the present amount of the contingent-fund. The proprietors would recollect that the company borrowed that amount from the contingent-fund some ten years back, and that each half year subsequently they had paid back a portion of the loan, until now, he was happy to say, the whole was replaced. The contingent-fund was invested in the 3 per Cent. Reduced Annuities, and nothing was now due by the company to that fund.

Mr. BOX denied that the £17,055 so invested was the whole of the contingent-fund of the company. In 1854 it stood at £44,700, and he was amazed,

therefore, to hear the deputy-governor say that the contingent-fund was now intact.

The DEPUTY-GOVERNOR assured the honourable proprietor that the company owed not one sixpence to that fund, because, by the authority of the court of proprietors, the directors expended £25,000 of it in laying down new mains where it became necessary to have duplicates for the supply of cannel gas.

Mr. BOX called for the minute authorizing such an appropriation, expressing a strong opinion that at the time the £25,000 was advanced there was a distinct understanding that it was only to be considered as a loan.

The SECRETARY, having referred to the books, said there did not appear to be a resolution of the court of proprietors upon the subject, but he found a resolution of the court of directors of the 24th of November, 1854, to the following effect:—"Upon the further consideration of the subjects of the investment and contingent accounts, resolved that a sum of £25,000 be carried from the contingent-fund to the credit of the new works account."

The DEPUTY-GOVERNOR said that that decision of the directors came before the following court of proprietors and was approved by them, and every subsequent half-yearly account showed that the contingent-fund was invariably brought down, as £17,000 odd, with the exception of a sum of £900 taken on one occasion for a contingency to a gasholder in Brick Lane.

Mr. RHODES inquired when the contingent-fund was first formed, and for what?

The DEPUTY-GOVERNOR replied, a great many years ago. At that time the apprehension was, that a gasholder might blow up, but the company had gone on for nearly fifty years without the occurrence of such a catastrophe.

Mr. BOX said he was now perfectly satisfied on the point. He had thought it an extraordinary thing that so large a sum as £25,000 should disappear from the fund without some notice respecting it.

Mr. PRICE said he should like to have some information respecting the item of "Rates." It appeared to him as though there had been an increase on that head of £350 since last year.

The DEPUTY-GOVERNOR said it was more than that—it was £450.

Mr. PRICE thought it was very desirable to prevent the parishes overreaching the companies, and he was glad to see that this company had taken steps in that direction by appealing against their assessment. He believed there were three appeals by them—one in respect of a rate in 1857, one in 1858, and another subsequently. He thought it was a pity the matter was so long before it was decided.

The DEPUTY-GOVERNOR said it was a long time, but the delay was unavoidable. The company's solicitor hoped that shortly the subject would be brought before the arbitrator. He could assure the proprietors that the directors had done all in their power to bring it to a hearing.

The GOVERNOR said the directors were very anxious that it should be done.

Mr. PRICE suggested that the reason why the parishes had so largely increased the assessments was, that the company had been laying down new mains without permission, which had given offence to the local authorities.

The DEPUTY-GOVERNOR said the rates were raised directly, and it was a very odd thing that the only other parties in that parish who were similarly served were the pianoforte-makers opposite, with whom the parish had quarrelled on the question of a line of frontage. The directors had caused the parish books of Clerkenwell to be searched, and they found that, with the exception of this and two other gas companies, there was only one other manufactory upon which the rates had been raised; so that it was quite clear the parochial authorities wished to make the companies bear the principal burden of local taxation. For himself, he could see no reason why a company consisting of ninety proprietors should be assessed at a higher rate than if there were only nine.

Mr. PRICE said there ought to be no difficulty in arriving at the rateable value of the company's property in a parish. The principle to be adopted was to ascertain what a tenant, knowing the use to which the property could be applied, would give for the same. There was no question of law involved in it; it was a mere question of valuation according to the principle laid down in the Act of Parliament. As he was himself connected with one of the metropolitan vestries, he had had some experience on this point in reference to the rating of companies.

The DEPUTY-GOVERNOR said the misfortune was that in rating a public company the parishes would persist in taking into consideration the profits the company were making, which they had no right to do. When they came to rate a brewery they did not attempt to adopt this principle, and yet the brewer's drays and horses, which were the means of conveying the article he dealt in to the consumer, stood in the same position as the mains of a gas company.

Mr. PRICE said he feared the fault was partly with the companies themselves, who tried to be rated at an insufficient amount. It could not be denied that, of three adjoining houses in a street, if one was a baker's, the second a butcher's, and the third a private house, the two former would pay a higher rent, and be liable to a higher rating than the latter, on account of the commercial advantages attaching to them. When public companies insisted that their property should be taken as worth no more than the same extent of private building, they committed a mistake. The value of property depended upon the value of other property in the neighbourhood, and also upon the uses to which it was applied. It that way, profit became one of the elements in the consideration of assessable value. The mistake on the other side was, that vestries had sometimes taken the profits of a company as the sole element in their calculation. In the parish of Paddington, to which he belonged, they had adopted that principle with reference to the Great Western Railway, the Canal, and the Water Companies. The error into which companies fell was that of saying, "You must not take profits into consideration at all;" but, if they wished to avoid litigation, they must yield the point that profit was an element.

The DEPUTY-GOVERNOR said he did not believe that companies resisted on the ground that profit was not one of the elements, but that it was not the sole one. No doubt it was to be considered; but take the case of two drapers' shops, similarly situated, one realizing a profit of £500, and the other of £2000 a year. No difference of rateable value was made in the parish books on that account, but they were rated at precisely the same sum. But if the element of profit were admitted, they must go into all these circumstances. The fact was that the parishes, whenever it suited them, took into account the question of profit, and, when it did not, they excluded it.

Mr. POLLOCK thought it was an unusual thing in meetings of this company to find a gentleman come forward to defend the parishes; and when he remembered the injustice with which they dealt with gas companies, he was rather surprised at it. In reference to the parish of Paddington, he knew that the vestry had yielded to the extent of £10,000 in assessing the Great Western Railway; the fact was, the company, being a powerful one, would not submit to extortion. As a member of this company, he thought it was the duty of the directors to see that the assessment of their property was kept down to the lowest point, because he knew that, on the other hand, attempts would be made to raise it beyond a just amount.

Mr. BOX said he found that during the last half year there had been an increase in the consumption of coals to the extent of 1758 tons, but he did not find a corresponding increase in the gas rental; it was £68 deficient of what it should be. The increase in the gross rental was £2929 upon the corresponding period of last year.

The DEPUTY-GOVERNOR said the proprietors would find, upon comparison, that the increase was exactly in the same ratio—viz., 3 per cent.

Mr. BOX said the earnings from 100 tons of coal were £170·50 this half year. In the corresponding half year they were £170·62. The difference of the ·12 was 2s. 4½d., which upon the whole quantity of coals used was almost £69. He did not say that this was an evidence of bad working; indeed, it was an improvement upon the half year ending Christmas last, when the difference was £360.

The DEPUTY-GOVERNOR said he would endeavour to make the state of affairs clear to the proprietors. The total quantity of coals used by the company for the half year ending Midsummer, 1858, was 55,435 tons. The total quantity for the half year just completed was 57,194 tons, or, in round numbers, 2000 tons more. The cost of the coals in 1858 was £44,744, and in 1859, £44,553; so that the company got 2000 tons more coals for £200 less cost. This was a proof that the directors had given their best attention to their coal contracts. The increase in quantity was, as would be seen, just 3 per cent.; the decrease in money was a half per cent. The gas made in the half year ending Midsummer, 1858, was 532,000,000 cubic feet, and in the last half year, 544,000,000—in round numbers the increase being 2¼ per cent. The quantity of gas per ton of coals was ¾ per cent. less, whether arising from the fact of the coals being wet or the retorts old, he could not say.

Mr. BOX asked what quantity of gas was produced per ton?

The DEPUTY-GOVERNOR said, taken from the meter for the half year ending Midsummer, 1858, it was 9626; for the last half year, 9603. The rental for light in 1858 was £94,586, and in 1859 £97,515, being an increase of 3 per cent., exactly agreeing with the increase of per centage in coals. In products there was a deficiency. This was the directors' great difficulty, and it was one which they could not control or overcome, as it depended upon the price obtained for coke. All the gas companies of the metropolis had the same difficulty to contend with. At Midsummer, 1858, the products realized £19,976, or, in round numbers, £20,000; for the half year just ended they produced only £15,629, being a decrease of 21¾ per cent.; so that if Mr. Box took the products as part of the revenue arising from £100 worth of coal, he would find that it cost them more to get the difference. It was a misfortune that there should be that deficiency of £4000, but they could not control it. The rental per ton of coals in 1858 was 34s. 1½d.; this year it was 34s. 1¼d., or as nearly as possible the same. The net cost of coal per ton, deducting products, was, in 1858, 10s. 0½d.; in 1859, 11s. 1¾d., or an increase of 11¼ per cent. Wear and tear of retorts per ton of coal in 1858 were 8d.; this year, 9d. General wear and tear in 1858 was 2s. 6½d.; this year, 3s. 3¾d. He had the particulars of this expenditure before him, if it were necessary to go through them, which showed that there was about £1500, which was an unusual item. The wages per ton of coals were precisely the same this half year as at the corresponding period of last year. The rental realized per 1000 feet was, in 1858, 3s. 6½d.; this year, 3s. 6¾d., so that they had done better in this respect, probably the leakage being somewhat less. It was a half per cent. only, but still it showed an improvement. There was one thing he might state to them—it was a curious thing that in 1856, 1857, and 1858 the coals carbonized were exactly the same within 200 tons, while their rental had increased £10,000 in the interim.

Mr. PRICE said he should like to make one remark in reference to the proceedings of the parish delegates, as he considered it was a most important matter, and one which demanded the very serious attention of the directors. He was far from wishing to impugn the conduct of the board, for, indeed, he felt that the company were fortunate in having such men for the management of their affairs; but he thought he could throw out a hint which might be useful to them. It appeared to him that the delegates were going upon a wrong basis. They had taken possession of certain newspapers, and had written articles in them upon the effect of the monopoly of gas in the metropolis. To the statements thus made, he (Mr. Price) was in hope that ere this the directors of gas companies would have given some kind of answer, because they contained such extraordinary fallacies, and were written with no other intention than to delude the public and damage the interest of the companies. He would venture to suggest that the directors should read the articles he referred to, and see whether some refutation of them might not be attempted. All that the companies asked was, that they should have a fair rental for the article which they supplied, and a fair profit upon the capital invested in their undertaking. But the parish delegates, by the course they were adopting, proved that they believed the principle of free trade might be good in everything else except in gas. One of their statements was, that the street lamps were very much overcharged; whereas, as he understood from the deputy-governor, the supply to them involved a loss upon the company.

The DEPUTY-GOVERNOR: No, no.

Mr. PRICE said he understood that such was the case at one time, if not at present. The inconsistency of the statement made by the delegates on this point was, that at another time they charged the company with burdening individual consumers with the loss they sustained in supplying the parishes. Such matters as these ought to be taken up by the directors, who might enlighten the public as to the relative cost of supply to street lamps and private houses. The press was a powerful element in this country at the present time, and exerted a most extended influence; and the directors, many of whom were thoroughly competent to undertake the task, should see to it, that the fallacies which it put forth in opposition to the companies were thoroughly answered.

The DEPUTY-GOVERNOR assured the last speaker that every statement made in the public newspapers on the subject of the supply of gas to the metropolis came under the notice of the directors, and was well considered by them. Several answers also had been given upon questions of fact, for it was the policy of the delegates to tell only half the truth. But the proprietors must recollect that on this subject the only side which at present had been presented to the House of Commons was the case against the companies. When the inquiry was resumed in the next session, the companies would be prepared to show how utterly invalid that case was. Pending that vindication of their position, it was not for the companies to state all their points, so as to give their opponents the opportunity of getting up half-truth replies against them. With respect to the agitation by the parish delegates, one cause of it was, that the companies were assimilating the charge for the public lamps to that made upon private consumers. They said, and as he conceived very justly, that there was no reason why the parishes should pay 3s. for that which cost the private consumer 4s. 6d. Formerly, when a gas company wanted to go into a parish, the vestry thought they did a very clever thing in refusing permission unless the public lamps were lighted at a low figure. When the London Company, for instance, went into St. James's parish, they were obliged to consent to supply the street lamps at

£5. 10s. per annum, gas being at the time 15s. per 1000 to the private consumer, and the sum which the parish ought to pay, therefore, being fifteen guineas. What was the result? Why, the parish got their supply at 5s. 10d. or 5s. 6d. per 1000, and the tradesman, to whom gas was a positive necessary, paid 15s.—while the authorities congratulated themselves on having done a devilish clever thing in having done the company out of 10s. per 1000. In the Westminster district, the Chartered Company had offered to supply the public lamps on the same terms as private consumers, by meter, so that they would only be charged for the amount actually consumed, provided some plan could be adopted by which the amount of consumption was fairly ascertained. The parish authorities objected to having a meter to each lamp, or to have a separate main laid down for the public lamps, and they proposed that there should be one meter to every twelfth lamp, and that the lighting and extinguishing should be by their own lamplighters. This was an exceedingly innocent proposition, as it looked at first sight, but the result of such an arrangement might be that the cock at the twelfth lamp would be turned on so as to burn only two feet an hour, while the other eleven would be fizzing away at the rate of 7 or 8 feet an hour. He did not mean to say that the lamplighter would fraudulently do it, but it might be so by accident. Independently of that consideration there was this also, that the lamp to which the meter was affixed would never burn the same quantity of feet as the others, because there was a pressure to be overcome in the meter which, if the gas were fairly turned on, would perhaps cause a difference of a foot, or a foot and a half, less consumption in the lamp to which it was attached. The only fair way, therefore, was to have a meter to every lamp, and they had told the board, of which Mr. Hughes, the great agitator in the matter, was a member, that on that condition they would consent to supply the parish on the same terms as the private consumer.

Mr. RHODES inquired at whose expense the meters would be provided.

The DEPUTY-GOVERNOR replied it might be as in the case of private consumers, the company found the meter and charged a rent for it, or they might find their own meters. The company were determined to show the parish that they should no longer be allowed to have their gas at a less price than they ought to pay.

After some further conversation the motion was put and carried.

The GOVERNOR brought up the following report from the court of directors—"Directors' minutes, October 21, 1859, resolved that a dividend at the rate of 8 per cent. per annum, for the half year ending Midsummer last, be now declared and reported to the general court to be held on the 4th of November next;" and he moved—"That the dividend declared by the court of directors be approved and adopted, and be payable by warrant upon the treasurer on and after the 14th day of November inst."

The resolution was seconded by Mr. FORREST, and carried unanimously.

The GOVERNOR said there had been a great difficulty experienced by the directors in carrying on the concern by an occurrence which had produced a considerable effect upon the public mind—the strike. At the Westminster station the workmen of the company struck, and this had been the cause of a great expense to the company. In the City Mr. Upward managed to keep the men in good temper, and there the company had not been put to one shilling expense. The effect of the early-closing movement had been to cause a large reduction in the consumption of gas in shops and warehouses; but this decrease would be more than compensated if the proprietors would more generally use gas in their private houses, and recommend its use among their friends. He concluded his observations by strongly urging upon the proprietors the use of coke for domestic purposes.

The DEPUTY-GOVERNOR spoke in terms of eulogium of the conduct of the company's officers during the strike, and stated that the directors had been so thoroughly satisfied with their zeal and energy on that occurrence, that they had passed a special vote of thanks to them for their services.

Mr. RHODES thought that something ought to be done for those officers who had so strenuously exerted themselves at so critical a time.

The DEPUTY-GOVERNOR said the directors felt that it was not a case for a money recompense, as it was the duty of the officers so to exert themselves; but if an intimation were given by the proprietors that a certain sum should be divided among them, the directors would be only too happy to carry out their wishes.

After some conversation, it was agreed to leave the matter to the consideration of the directors.

The retiring auditors, Messrs. Wollaston, Sloper, and Barker, were re-elected.

In reply to an inquiry it was stated that Mr. Wollaston had returned to England and was now performing his duty most assiduously.

Mr. SLOPER returned thanks for his re-election, and resumed the application which he made at the last court, for additional remuneration to himself and the representative of the late Mr. Witham for having conducted the audit of the company's accounts during the four years of Mr. Wollaston's absence.

A lengthened conversation ensued, and some correspondence on the subject was read. A motion to pay £50 to the two acting directors was carried by a show of hands, but a poll being demanded, Mr. Sloper withdrew his claim, and the motion was not persisted in.

A vote of thanks to the auditors and directors, and a brief acknowledgment on the part of the governor, terminated the proceedings.

WESTERN GAS COMPANY.

The Ordinary General Meeting of this Company was held on Thursday, Nov. 3, at the Offices of the Company, Argyll Street, Regent Street—F. W. RUSSELL, Esq., M.P., in the chair.

The following statement of accounts was laid before the meeting:—

GENERAL BALANCE-SHEET, JUNE 30, 1859.

Dr.				*Cr.*		
To proprietors' paid-up capital	£171,634	10	0	By permanent investment	£213,843	3 1
Loans in advance of calls	5,719	0	0	Sundry debtors	20,076	9 1
Ditto on mortgage	39,000	0	0	Stock in trade	3,816	1 10
Bonds	6,000	0	0	Cash in hand	11,165	3 1
	£222,353	10	0			
Sundry creditors	12,613	5	3			
Unclaimed dividends	255	13	3			
Reserved fund	5,246	9	3			
Retorts renewal account	789	2	1			
Profit and loss	7,637	17	3			
	£248,900	17	1		£248,900	17 1

CAPITAL STATEMENT, JUNE 30, 1859.

Dr.				*Cr.*		
To amount expended to June 30, 1858, as per published statements	£228,288	19	3	By amount received for deposits, calls, and interest, and for instalments on shares forfeited; also in respect of Belmont estate, for property sold, damage by fire, rents and dilapidations, as per published statements	£182,212	10 6
Expenditure from July 1, 1858, to June 30, 1859, viz.:—				Loans	44,719	0 0
Works extension	£2,790	0	3	Kensington extension bonds	6,000	0 0
Main-pipes	2,827	4	4	Amount received from shareholders in the year ended this day, viz.:—		
Service-pipes	197	13	10	On class A shares	£1,540 0 0	
Main-laying	1,261	9	2	Calls on old B shares	6,509 0 0	
Service-laying	195	9	11	Deposits on new B shares	4,884 10 0	
Reinstating roads	153	9	10	Interest on arrears of calls	29 17 4	
Meters	734	10	11		12,954	7 4
Fixing meters	106	0	4			
Districting, &c.	820	13	1			
	9,086	11	8			
Balance	8,510	6	11			
	£245,885	17	10		£245,885	17 1_0

REVENUE STATEMENT, JUNE 30, 1859.

Dr.				*Cr.*			
To coal	£24,203	4	4	By gas	£53,378	16 11	
Wages, gas-making	5,426	8	8	Meter rental	1,678	10 0	
Water, oil, and sundries	741	10	2			£55,057	6 11
Works renewal	2,387	1	6	Coke	£3,079	6 4	
Restoring pipes and meters	664	10	4	Breeze	414	19 4	
Lamp lighting	1,077	13	0	Tar	1,046	6 1	
Repairing lamps	298	17	7	Gas liquor	192	6 0	
Direction, salaries, and collection	4,307	10	5	Refuse lime	24	5 5	
Rents, rates, and taxes	577	14	6			4,757	3 2
Stationery and printing	201	12	7				
Incidental expenses	412	11	0				
Profit and loss (trade profits for the year, to June 30, 1859)	19,515	16	0				
	£59,814	10	1			£59,814	10 1

PROFIT AND LOSS STATEMENT, JUNE 30, 1859.

Dr.				*Cr.*			
To interest	£2,287	6	8	By balance (from July, 1858)	£ 223	13 5	
Reserved fund	2,000	0	0	Revenue (trade profits of year to June 30, 1859)	19,515	16 0	
Bad debts	668	8	10				
Dividend at 7 per cent. per annum, declared on the 21st of April last, in respect of first half year (and income-tax)	7,145	16	8				
Balance of profit available for second half year's dividend	7,637	17	3				
	£19,739	9	5		£19,739	9 5	

The SECRETARY read the circular calling the meeting and the directors' report as follows:—

The directors have the satisfaction to report that, during the year ended the 30th of June last, for which the usual statements of account have been furnished to the shareholders, the state of the company's affairs has further improved.

The year's increase of business has been much greater than the increase exhibited last year over the previous account, the gas and meter rental for 1858-59 having amounted to £55,057, showing an excess of £6139 over 1857-58, the rental of which latter year exceeded that of 1856-57 by £4167.

The return from coke and other products amounts to £4757, while for the year 1857-58 the amount was £4111.

From the past twelvemonth's working, a trade profit has resulted of £19,515. 16s. After paying interest, writing off bad debts, carrying £2000 to the reserve-fund, and paying the first half year's dividend, at the rate of 7 per cent. per annum and income-tax, there remains (including a small balance brought forward from last year) an available sum of £7637. 17s. 3d., sufficient for a second dividend at the same rate, free of income-tax.

The directors therefore recommend the meeting to declare a dividend of 7s. per class "A" share, this denomination now including the old "A" and "B" shares. The "New B's" are not entitled to dividend until the next division of profits.

The directors congratulate the shareholders on the improved position of the company in respect of its available capital. The shareholders were made acquainted by circular that the whole of the 10,000 "New B" shares had been readily taken up by the existing proprietary.

The subscribed capital now amounts to		£300,000
Consisting of 20,000 "A" shares, paid up in full	£200,000	
10,000 "New B's," 10s. paid	5,000	
		205,000
Leaving £9. 10s. per share		£95,000

to be called from time to time as the requirements of the company may render necessary.

The increasing business of the company required that its manufacturing and distributing powers should be augmented, to ensure an adequate supply of gas in all the company's districts during the approaching winter. Besides minor works, there-

fore, a new coal store and a set of large purifiers have been erected; one of the gas-holders has been telescoped, and some larger mains have been laid.

The directors deeply regret to have to record the death, in July last, of the company's engineer, Mr. Alexander Wright. The valuable services of this lamented gentleman, and his zeal for the interest of the company, have been frequently acknowledged by the shareholders. Mr. Pritchard, who has had several years' experience at the works, as assistant engineer, has been promoted to the office of resident engineer.

Since the decease of Mr. Wright the directors have had the works thoroughly examined by an eminent engineer, and have received from him a highly satisfactory report of their efficiency.

During the last session of Parliament a bill was introduced on behalf of some of the vestries and district boards for the regulation of the metropolitan gas companies. As this bill was objectionable in many respects, it was opposed by the companies and was withdrawn by the promoters. The directors trust that in the next session such a measure may be passed by the Legislature as, without interfering with the just rights of the companies, will satisfy the reasonable demands of the public, and terminate the agitation of this question.

By Lord Redesdale's Sale of Gas Act, which was passed last session, with the object of ensuring the more correct measurement of gas sold by meter, it is hoped that a fertile source of dispute between gas companies and their customers will be removed or materially reduced.

General Henry George Andrew Taylor, C.B., and Messrs. Francis Edwards and Vandeleur Benjamin Crake, directors, and Mr. Thomas Ford, auditor, retire by rotation, and severally offer themselves for re-election.

The CHAIRMAN then said: Gentlemen, I am happy to say that I shall not detain you very long this day. I think it is always a symptom of a company being in a sound and prosperous condition when the chairman has not to trespass much on the time of the shareholders. The exhibition of accounts, I think, must prove satisfactory to you all. Whatever apprehension might have been entertained that this being the last half of the year, it would be so much worse than the previous half year that we should not be able to maintain the rate of dividend, has been completely set at rest. You find from the accounts that we are not only able to maintain the dividend that we recommended on the occasion when we last had the pleasure of meeting you, but there is every prospect of our being able to continue it, unless something that we cannot foresee should arise to prevent us. Unless that be the case, I think we shall not only maintain our dividend at the present rate, but we shall steadily advance to an improved dividend, to reward the shareholders for the long period they were without a dividend at the commencement of this company. Gentlemen, we attribute this state of things much more to the gradual and steady increase in the consumption of our gas than to any effects of the districting arrangements. I hope it will be impressed upon the minds of all, that instead of our ever contemplating, as was stated by the promoters of that bill to which we have alluded in our report, an abuse of the monopoly, as it is called, which has been placed in our hands, our interest would draw us the other way. It is our desire, as it is our interest, in every step that we take, that if we increase your dividend, we shall also be able ultimately to distribute the gas with greater economy; and we are determined, at all hazards, to keep up the quality of our gas to the same standard as that which has given us our present position. (Hear, hear.) I may draw your attention to a paper which is in the room—a most important and valuable document *—the report of the commissioners who were directed to inquire into the propriety of exhibiting by gaslight the valuable paintings at the South Kensington Museum. When Mr. Faraday's name appears attached to that report, it must of course carry very great weight with it. Our gas, which is used in that building, instead of deteriorating the pictures, appears to have had quite a contrary effect; for pictures which are exhibited in other buildings not lighted with gas at all, have been seriously affected, thus showing that our gas has been perfectly satisfactory. I trust that this will induce the Government to offer the public that great boon of an exhibition of valuable paintings by gaslight, and they will thus become large consumers of our own, though that may be said to be a somewhat selfish motive. There is only one circumstance to dwell upon, and I am quite sure you will all sympathize with us in the regret which the directors felt at the (I may say) sudden death of their late chief engineer, Mr. Wright. (Hear, hear.) Mr. Wright was a man who brought himself forward by his own exertions. He came with very humble means to London, and by the education which he afforded himself, and his natural shrewdness, he raised himself to a very high position. I think, when I mention that he became one of the representatives at the Metropolitan Board of Works, it will be a proof of the manner in which he was esteemed. During the time he rendered service to the company, no person could have acted with more judgment or more skill than he did. His advice was very valuable, and had much weight at this board, and we feel very great regret at his premature decease. I have nothing further to add, because the history of one day at our works is the history of the next—all goes on in that smooth, steady, simple way. We are producing gas to supply our customers of the best kind in the cheapest way, and I trust we shall long continue to do so. I have now to move that the report of the directors be received and adopted.

Mr. EDWARDS: I beg to second that, and I shall simply congratulate the proprietors upon the present condition and prospects of the company.

The report was unanimously adopted.

Mr. RHODES: As I am a new shareholder, I should like to ask when your register of shares was last examined by the board of directors?

The SECRETARY: It was examined by the auditors just before the books were closed. Mr. Briggs will tell you that he finished last night.

Mr. RHODES: Do the auditors examine the register yearly or half-yearly?

The SECRETARY: Half-yearly.

The CHAIRMAN: That is a most important matter, and we are much obliged to you for calling attention to it.

Mr. RHODES: In the accounts I see an item of £300 for repairs of lamps; is that for the half year or for the year?

The SECRETARY: For a year. We get paid for that by the parishes, and that is what we pay under our contract.

Mr. RHODES: Respecting the good light you have been speaking of as that which your company gives to the public, do you make any other kind of gas but cannel coal gas?

The CHAIRMAN: Only one kind.

Mr. RHODES: So I was given to understand. I have been in your district, and I consider it certainly a very good one. There were complaints made to me, however, of your lighting not being good, and of its smoking the ceiling very much. I took the trouble to examine into the matter, and I found that they had not got the proper kind of burners for the gas you were supplying them with. I told them that that was one cause, and that if they mentioned the circumstance to the company no doubt every attention would be paid to them. As they said they wished to go back to companies that had previously been supplying them, I pressed the matter a little further. The last time I went there I found they had got the right burners, but they said, "There is another thing." I replied, "So I thought." They said they had been accustomed to have gas supplied from other companies without being charged for the meters. It seemed to be painful to them that this company made a meter-charge. I thought perhaps this had been an oversight, and I mention what I hear out of doors that you may know it within doors; because I am told that complaints do not come before the board.

The CHAIRMAN: No complaint is made that does not come before the board, I believe; and all complaints are considered by them.

Mr. RHODES: I found that was the principal sore they suffered under.

The CHAIRMAN: I do not understand that, because we took no rents from companies who did not charge for meters. It is just possible that, owing to the great competition, in order to induce consumers to take the gas of a particular company which did charge for meters, in some particular case they may have charged no meter-rent.

Mr. RHODES: I consider your bad debts are very high, too, if they are for six months.

The SECRETARY: I think they will compare favourably with other companies. There was one debt of £180 which arose from the lighting of the Panopticon, which became insolvent. We had no hesitation in supplying that building owing to the respectability of the names that were attached to the prospectus.

Mr. BRICKWELL: It may be some satisfaction to Mr. Rhodes to know that it is no unusual thing for a company, which is a near neighbour of ours, to write off £800 bad debts for a half year. I would also call his attention to this, that if we were to supply the meters, the capital that would be required to be invested in furnishing them would materially affect our dividend. There is no disposition on the part of companies to do it, and it is only done as matter of sheer compulsion.

Mr. RHODES: I think it would be as well whenever you have any doubt to have the money for the gas beforehand.

The CHAIRMAN: We do not think it would be wise to do that.

Mr. A. GRAY: It would only make you unpopular.

Mr. RHODES: I do not know that I have any other questions to put.

The CHAIRMAN: We are much obliged to you for some of your remarks, because I think they are of great value in explaining to the shareholders at large the real state of things.

Mr. RHODES: How many classes of shares have you?

The CHAIRMAN: Only two. There were two classes originally—A's and B's—but both being paid up they are merged into one. There are now the new B shares upon which 10s. only has been paid and £9. 10s. remains to be paid.

Mr. RHODES: I move—"That upon the recommendation of the board of directors, a dividend be, and the same is hereby declared for the half year ending the 30th of June last, of 7s. per share on class A shares, free of income-tax, being at the rate of 7 per cent. per annum, to be paid to the shareholders now appearing on the register."

Mr. A. GRAY: I have much pleasure in seconding that resolution; and I think the proprietors cannot do otherwise than feel that they owe a deep debt of gratitude to the directors for the manner in which they have attended to the interests of the company. I quite agree that there is great probability of your having a better dividend; but supposing you never get a worse than 7 per cent., I think you will have very little cause to complain. (Hear, hear.) Your worthy chairman has alluded to an Act that was attempted to be passed in the last session of Parliament, and I should be wanting in justice to him if I did not say that the gas companies are deeply indebted to him for the assistance which he rendered to them upon that occasion. I, personally, am deeply indebted to him for the kindness which I received at his hands during the late struggle that I had in getting a bill passed through Parliament. With regard to meters, I think it was a very foolish thing for the companies to supply them. It was the effect of Mr. Charles Pearson's agitation, who compared the meter to the linendraper's yard. We all know that a draper will keep his yard for years without its requiring any repair, whereas the meter requires constant attention. I may add that being required to supply meters involved my company in an expenditure of £20,000; and you will thus be able to form an idea how honestly such an arrangement works with regard to gas companies. I hope the practice will continue as it is, and that the man who wants a meter will have to purchase it. With regard to people being called upon to pay in advance, I think it would be a most injudicious course. I think the best plan for every company to pursue is to act towards the poor man as you would expect the poor man to act towards you if you were in his situation. (Hear, hear.) And while my honourable friends the directors continue the course which they are pursuing, I have not a shadow of doubt that you will go on from prosperity to prosperity. If that should be checked by any unforeseen event, then we must be content with a little less; but under the able management of the directors, I am sure we shall be protected; and when this cabal which has been created by interested people shall be inquired into by a committee of the House of Commons, where all the vague statements will undergo thorough investigation, I undertake to say that the gas companies generally will, the more their conduct is inquired into, satisfy the public that the gas companies, as a body of men, are not deserving of the censure which has been cast upon them. (Hear, hear.)

The resolution declaring the dividend then passed unanimously.

The retiring directors and auditors were unanimously re-elected.

General Taylor returned thanks on behalf of himself and colleagues.

On the motion of Mr. A. GRAY, a vote of thanks to the chairman and directors passed by acclamation.

A vote of thanks to Mr. Barber (the secretary) closed the proceedings.

* This report appeared in the JOURNAL of Aug. 2, 1859, page 435.

THE METROPOLITAN GAS SUPPLY.

WESTMINSTER DISTRICT BOARD OF WORKS.

An Adjourned Ordinary Meeting of the Board was held at the Offices, Great Smith Street, on Friday evening, Nov. 4—Mr. GODSON in the chair—to receive tenders for lighting the public lamps in the district from Christmas next.

There were two tenders sent in, one from the Equitable Gas Company for the portion of the district at present lighted by them, and the other from Messrs. Defries and Son for lighting the whole of the district with oil.

The tender of the Equitable Gas Company was for gas consumed through a batswing or other ordinary burner equal to 10 sperm candles, burning 120 grains per hour, £4. 2s. 6d. each lamp; for a similar burner with gas equal to 12 sperm candles, £4. 10s. The above prices to include lighting, extinguishing, and repairing the lamps; the contract to be for three years, terminable by six months' notice at the end of the first or second year. The lamps to be lighted half an hour after sunset, and extinguished half an hour after sunrise. The company to be allowed to break up the streets under the control of the board during the continuance of the contract, on giving three days' notice to the surveyor of the board, except as to laying new mains during the months of December, January, and February. The tender also stipulated for modifications of the present penal clauses, and

for the settlement of all disputes by arbitration under the Companies' Clauses Act.

The tender of Messrs. Defries and Son was for lighting the street lamps with oil and their new patent double wick, estimated to give a light equal to six or more candles, or to one gaslight. The price per lamp, including workmen and necessary material, and also for keeping the lamps in repair, was £6. 17s. 6d. per annum, the lamps to be lighted from dusk to daylight, and the contract to be for one, two, or three years. An interior oil lamp, it was stated, would be required, which Messrs. Defries would be happy to supply at an extra charge—payments to be made quarterly.

The CLERK stated that no new tender had been received from the Chartered Company.

The CHAIRMAN thought that the board should first proceed to reconsider the objections which had been stated to the Chartered Company's tender of the 19th of August.

The CLERK read the tender, and also the report of the committee of works thereon.

The CHAIRMAN said there appeared to be two main objections, the first of which was to the power sought by the company to break up the streets at their pleasure. As advised by their solicitor, this was contrary to the Act of Parliament.

Mr. ROGERS denied that he had so advised the board; on the contrary, in a case where such power had been delegated, the Court of Queen's Bench had ratified the act of the board. It was quite competent to this board to accept the company's proposition; the only question was whether it was discreet.

Mr. PENN said the Chartered Company were, no doubt, vexed at the course adopted by this board, and in seeking this power were desirous of being independent of them for the future.

Mr. HUGHES protested against the delegation to the company of a power with which the Legislature had specially endowed the board. There was no pretence of reason for it, because the company could now, on giving three days' notice, open the ground for the purpose of repairing their existing mains The only case in which there was a restriction was that of laying down new mains.

Mr. MALLOCK: What reason do they assign for it?

Mr. HUGHES said, none whatever; but it was a demand now generally made by the metropolitan gas companies when new contracts were about to be entered into. The truth was, they had the monopoly, and they felt they could do as they liked.

Mr. PENN reminded the board that the Chartered Company assigned as a reason the refusal of the board to allow them to lay a main to their new gasholder.

Mr. HORNE objected to the board going over all these matters again. The subject had been thoroughly discussed, and they had now only to decide which of the tenders sent in it would be advisable to accept.

Mr. NORRIS, without reflecting upon the conduct of the works committee, thought that something might yet be done by negotiation, and therefore moved—"That the question of lighting the district with oil be postponed, and that a committee be appointed to wait upon the gas company to see whether any and what arrangement can be made with respect to the second clause in their tender."

Mr. EYLES seconded the motion.

Mr. PENN said he earnestly hoped that no deputation would be sent to the company again, considering the insulting treatment which the last committee received at their hands. He, for one, would rather see the parish in darkness than again be subjected to such scurvy treatment.

Mr. HUGHES also objected to the motion, and proposed the following amendment:—"That this board having in vain endeavoured to effect an equitable arrangement with the Chartered Gas Company as to the measurement of the gas consumed in the public lamps, considers itself bound in duty to the ratepayers to insist upon the gas being paid for by measure, even if compelled by the vexatious conduct of the gas company to place a meter at every lamp." The cost of such an arrangement would probably be £1600, but when they recollected that it was to check a consumption of gas for which they now paid about £5000, the importance of it would at once be apparent; and he firmly believed that in the course of two years not only would the outlay be repaid, but the parish would gain immensely by having adopted that mode of supply. According to the company's own statement, the consumption of cannel gas by a street lamp was about 10,000 feet per annum. This would be considered in the case of a private consumer by no means a small consumption, and every such consumer had a meter to himself. In the course of the discussion he had shown that if they accepted the present offer of the company, they would be paying something like 7s. 8d. or 8s. per 1000, whereas, if they resolved to be supplied by meter, the company would be compelled to supply at 6s. per 1000. The board would also be able to effect a saving in the cost of lighting, cleaning, and repairing the public lamps, which the company estimated at 15s., but which could be satisfactorily accomplished for 10s. Another source of saving would arise from the circumstance that the lamplighters, acting under the instructions of the board, would not be allowed to light the lamps until actually required, and would extinguish them in clear weather earlier than by their contract the company were permitted to do. In this way he thought they might economize to the extent of one-sixth of the present cost for lighting.

Mr. ARNTZ, in reply to a member, said he roughly estimated the expense of the meters at 35s. per lamp, and the fixing at from 7s. to 10s. each, and the cost of lighting, repairing, and cleaning the lamps might be taken at 15s. as a maximum.

Mr. DEAKIN seconded Mr. Hughes's amendment, observing that the only difficulty he anticipated if it were carried out, was that arising from the fixing of the meters and ascertaining the state of the indices from time to time.

Mr. HORNE said he had not intended to offer a single remark on this occasion, but the audacious statement of Mr. Hughes, the engineer of the delegates, compelled him to do so. Mr. Hughes stated that the present price charged for gas was at the rate of 8s. per 1000, and that this was owing to the monopoly. Now, this he (Mr. Horne) denied——

Mr. HUGHES rose to order.

Mr. HORNE said he was quite aware that Mr. Hughes did not like to have the truth spoken on this point. But the fact should be stated that at the price charged, and with a consumption of 2½ feet per hour, the gas to the public lamps cost as nearly as possible the same as to private consumers. But supposing for a moment that they were paying 8s. per 1000, who had they to thank for it but Mr. Hughes? It was Mr. Hughes who assisted in the preparation of the existing contract when it came before the committee of works, of which he was chairman, and it was signed with his name when it came up before the board for approval. Moreover, it was he who proposed that the board should accept that contract, and yet, in the face of all this, he now came forward to declare that by that contract the board were robbed of £2000 a year. Why did he not say so then? At that time he argued strongly against the board burning by quantity, and said that all they wanted was a good light. "Let us have 10-candle gas," he said, "quantity has nothing to do with the question."

Mr. HUGHES: That is a long time ago.

Mr. HORNE knew it was, and that in course of time persons might change their opinions, but one could not undergo such a rapid change as in this instance without exposing one's self to suspicion.

Mr. HUGHES again rose to order.

The CHAIRMAN said he hoped that all personalities would be avoided. No doubt Mr. Hughes could give a short and satisfactory answer to such a statement as that just made. It would be a sufficient justification to say that all the tests upon which Mr. Hughes's present opinion were founded had been made within the last twelve months.

Mr. HORNE proceeded. Much had been said about the impolicy of the board conceding authority to open the ground, but no one had attempted to show in what way the inhabitants of the parish would lose by such an arrangement. He saw no just reason why they should refuse permission, but on the contrary, for it was evident that the company could not give an effective supply except by laying down adequate mains. Was any one foolish enough to imagine that the company would break up the streets for the sole purpose of annoying the board? The thing was preposterous. On the other hand, he doubted whether, without such permission, the company having entered into a contract to give a good supply of gas, would not be exonerated in alleging that the board prevented them from fulfilling their engagement by denying them the right to provide adequate means for the conveyance of the gas.

Mr. NORRIS having withdrawn his proposition, the amendment became the original motion.

Mr. MALLOCK objected to it, and reminded the board that in addition to the cost of maintaining the lamps and meters there would be the salaries of persons whose duty it would be to take the state of the indexes, &c.

Mr. EDGAR HORNE moved another amendment—"That the proposition of the Chartered Gas Company for lighting the public lamps within this district at £4. 5s. each lamp be accepted. That with regard to clause 2 in their tender, having reference to opening the ground, the board cannot consent to such a general permission as is required by the company, but are willing to agree to a clause similar to that in the present contract. That with regard to clauses 8 and 9, the board is willing to agree to the penal clauses being modified and reasonable penalties being fixed."

Mr. MALLOCK seconded the amendment, and said he thought the question of supply by meter had better be left until they saw what was their position under the forthcoming bill in Parliament.

The CHAIRMAN dissented from such a course, and thought it would be injudicious to depend upon the result of future legislation. No doubt the gas companies would be willing to provide meters and charge a rent for them.

Mr. HUGHES replied, and said that the experiments to which the chairman had referred as the basis of his opinion had been made the subject of frequent observation, but their correctness had never been impugned. Indeed, subsequent experiments by two eminent gas engineers, who were generally engaged in the interest of the companies, brought out a lower result than that contained in his pamphlet. In reference to Mr. Horne's observation, he asserted that he had never stated the present price of gas to be 8s. per 1000, but that if they accepted the new tender for 10-candle gas, the quantity not being stipulated, they would be paying at that extravagant rate. If they could secure 10,000 feet to each lamp, he was willing to admit the cost per 1000 would be only 6s.; but then he contended they ought to be supplied at 25 per cent. less than that.

The amendment was then put and negatived, and the original motion carried by a majority of six.

Mr. HUGHES moved—"That the surveyor be directed to prepare an advertisement requesting tenders for the supply and fixing of about 800 meters to the lamps in this parish." By adopting these resolutions, they did not pledge themselves to buy the meters, and he hoped, by showing a bold front to the company, they would shrink from imposing upon the parish such an enormous expenditure.

Mr. EYLES seconded the motion.

Mr. ARNTZ said if the supply was by meter the parish would be in the position of private consumers, and in all such cases the company found the meters.

Mr. HUGHES said they might find their own if they chose. The board would avail themselves of the recent Act of Parliament, and see that the meters they used registered correctly; so that they would not be liable to such frightful overcharges as were proved in Parliament during the last session, in which meters were found to register 40, 50 and 60 per cent. against the consumer.

Mr. ARNTZ suggested that the board would probably find it the more advisable course to allow the company to provide the meters.

Mr. AUSTIN objected to the motion. It was jumping to a conclusion in the dark, for they did not know whether the company might not insist upon their tender being accepted in its entirety.

Mr. HORNE wished the board to remember that, by accepting the proposition now before them, they would be saddling themselves with a rate of 2d. in the pound.

After a considerable discussion the resolution was put and adopted.

It was also resolved, on the motion of Mr. HUGHES, "That the Chartered and Equitable Companies be invited to state the annual rent they would charge for each meter to be supplied to the public lamps. That with regard to the proposition of the Equitable Gas Company, a similar proposition be made to them as to the Chartered Company—viz., to supply by means of a meter to be affixed to every twelfth lamp. That the companies be informed that the board, in justice to the ratepayers, cannot consent to the clause respecting the breaking up of the ground, but will reserve to themselves all the powers conferred upon them by the 9th section of the Metropolis Local Management Act."

Mr. DEAKIN said he thought the companies should be informed that if they consented to supply by meter the board would light their own lamps.

Mr. HUGHES said it was not necessary to stipulate that, as it would be clearly understood. The companies never required to go into a private consumer's house to light his lamps.

It was then resolved "That the further consideration of the subject be adjourned until the next meeting of the board."

THE CARCEL LAMP AS A PHOTOMETRIC STANDARD.

A late number of *Le Gaz* contains a most able and interesting paper from the pen of its editor, M. Emile Durand, upon the difficulties attending the use of the Carcel—or mechanical lamp—as a standard light in photometrical experiments. Our own experience so completely accords with his, both with respect to the want of uniformity in the light emitted and its average intensity as compared with stearic acid candles, that both series of experiments might have been conducted in the same laboratory and by the same hands. For uniformity and for steadiness of light the stearine candle sold in France under the name of "*Bougie de l'Etoile*" far surpass the ordinary sperm candles, and our experience leads us to the adoption of such a candle, burning 10 grammes of matter per hour, as the equivalent, in all photometric experiments, of the parliamentary or sperm candle burning 120 grains. Subjoined is a translation of M. Durand's paper:—

The contracts for lighting two important towns with gas have lately been submitted to us, with a request that we would give our opinion as to the natural interpretation of the clauses in each of them which relate to the illuminating power of the gas supplied for public consumption; and, although we have discussed this subject on a previous occasion, we think it advisable to publish our answer, and to enter into all the details connected with the subject, mainly on account of the importance to gaslight undertakings of such experiments as may be instituted in accordance with the municipal regulations.

We would, in the first place, protest against a pernicious custom which, without any valid reason, has found its way into all municipalities—French as well as foreign—and which consists in the universal adoption, without previous examination, of the data laid down for the lighting of the city of Paris, as though every town in the world ought to be condemned to be lighted in the same manner as the capital of France. But, both in the provinces and abroad, it seems sufficient to say that a thing is done in this or that way at Paris, in order to set it down as perfect, no matter what its actual impefections may be.

We have already shown how erroneous were the illuminating powers ascribed to different burners of the three kinds in use in Paris, particularly as regards the possibility of their simultaneous realization; but, notwithstanding the defects we then pointed out, we find the same mistake is universally committed. Thus, at Genoa, the clause in the contract fixing the illuminating power of the gas, is drawn up in the following manner:—

"The gas shall be perfectly pure, and its illuminating power shall be ascertained by the quantity required to give the following degrees of luminous intensity to the public lamps, viz:—

"First class, consuming 3·53 cubic feet per hour, to give 0·77 of the light of a carcel lamp burning 1·48 ounces avoirdupois of oil per hour. (The quantities of oil are expressed in the original by weight.)

"Second class, consuming 4·94 cubic feet per hour, to give 1·10 of the light of the lamp above described.

"Third class, consuming 6·35 cubic feet per hour, to give 1·48 of the light of such carcel lamp.

"Fourth class, consuming 7·06 cubic feet per hour, to give 1·72 of the light of the same lamp."

Thus we see that, with the addition of an intermediate class, the conditions are the same as at Paris; and we are inclined to suspect that the degree of intensity specified for the third class has been ascertained by calculation, rather than by experiment.

This spirit of imitation would be in nowise culpable, if it were not attended with unfavourable consequences; but when imitation does not suffice—when the fulfilment of the borrowed conditions is formally required without any appreciation of the motives which dictated them—it follows that, by insisting too rigorously on the observation of the letter of the contracts, an injustice is involuntarily and inevitably committed, no matter what considerations of fairness may influence the superintending authorities.

For instance, we have formerly shown that, with the same gas, it is impossible to obtain at one time the exact degree of power specified for each of the three classes of street burners. We have proved that the burner whose conditions were most unfavourable was, beyond all doubt, that of the first class, which it was very difficult to raise to the required standard; whilst, on the other hand, when the gas was of good average quality, the fourth class burner was found to give a light of greater intensity than was required by the Paris contract.

Notwithstanding all this, there are still to be found inspectors who, having evidently but little experience in the manufacture of gas, are prepared, on a single experiment made on a burner of the first class, to declare the quality of the gas to be inferior; and then the municipal authorities, with the contract in hand, at once proceed to impose undeserved penalties on the contractor.

We have before us the particulars of an experiment of this nature which shows how far we are justified in warning the municipal authorities to guard against the consequences of the stipulations borrowed from the Paris contract.

The details of this observation are as follows, viz:—

Class of burner	First.
Street pressure	9-10ths.
Regulated pressure at the burner	5-10ths.
Consumption of gas per hour	3·53 cubic feet.
Distance between the lamp and the photometer	2 feet 6 inches.
Distance between the gas and the photometer	2 feet 2 inches.
Illuminating power of the gas as compared with the Carcel lamp	0·71.
The lamp was kept burning for the space of	15 minutes.
The quantity of oil consumed was	0·44 ounces.
The consumption per hour was consequently	1·76 ounces.

From these data, the conclusion drawn by the observer was that there existed a deficiency in illuminating power of 0·06 of a carcel lamp; in fact 0·06, when added to 0·71, make together 0·77, which is the required ratio of the illuminating power of gas when consumed in a burner of the first class, as compared with the carcel lamp. The thing is quite clear, according to the inspector.

But the carcel lamp ought not to burn more than 1·48 ounces of oil per hour, whilst it appears to have consumed 1·76 ounces. Now it is evident that if the consumption were increased nearly one fifth, the illuminating power must be likewise increased, if not in the same proportion, at least in a very remarkable degree. Thus the experiment gives 0·71 of a light superior to that given as the standard, which result attains to, if it does not exceed, the illuminating power required by the contract. There was, consequently, no just reason for asserting that there was any deficiency in the quality of the gas.

But what do inspectors care whether the lamp burn a little more or a little less oil? The result obtained is a difference somehow: so much the worse for the contractor. No account is taken of the errors which falsify the observation; it is not perceived that the actual result is better than could lawfully have been insisted on, and that the quality of the gas is all the better by reason of the observation having been made on the most unfavourable burner. In comparing the burners with a carcel lamp, the provisions of the contract are thought to be a sufficient security, and no more is said on the subject. Do the inspectors know which carcel lamp to employ, and what conditions are necessary to qualify it as a standard, or point of comparison? It is generally thought sufficient to take a carcel lamp, or even a moderator lamp—which burns about 1·48 ounces of oil per hour—and there is the standard ready to your hand! Much care is taken, as at Milan, in the arrangement of the experimental apparatus; the play of the gas-cocks, the positions of the gauges, the meter, the photometer, are all defined; but of the standard itself—the point of comparison, the smallest error in which would render useless all the other details—not one word is said. Take a carcel lamp, and that is sufficient!

Let us now endeavour to form some opinion of the correctness of the observations founded on the variations of the light taken as a standard.

Peclet, who was the first to take the mechanical, or carcel lamp as a standard for measuring the power of different modes of lighting, and whose works are too generally lost sight of in the inquiry as to the conditions required in the employment of that light, himself points out its irregularities.

The following are the variations observed by him:—

Taking the illuminating power of the carcel lamp when first lighted at	100
After a lapse of one hour, it became	103
At the end of two hours	116
At the third hour, it fell to	110
And again, in the fourth hour, it rose to	117

at which point it remained during three successive hours.

These variations he explains in the following manner:—

"The cause of this singular phenomenon is to be found in the loss of heat which occurs during the earlier part of the combustion, but ceases after a certain interval; and which loss greatly diminishes the intensity of the light. In common lamps this loss is occasioned by the heating of the burner and the glass chimney, which absorb a quantity of heat, always diminishing, and scarcely perceptible when the objects above-mentioned have reached their maximum temperature.

"In the carcel lamp, it is the heating of the chimney and of the oil which carries off the heat from the flame during the first hour of the combustion; but as the heating of the oil only ceases when the oil in the reservoir has acquired the temperature of that which passes out at and flows over the burner, we at once perceive that it requires a much longer period to produce an uniform intensity of light."

With these observations before us, in which the standard selected varies from 3 to 17 per cent., we see at once that the most careful management is required in its employment. But, some one might ask, at what period of the combustion should the comparison of the illuminating power be made? Should it be in the first hour, or in the fourth, when the lamp has acquired its permanent degree of intensity?

To this we answer, that it was from the works of Peclet that the practice was derived of taking the light of a carcel lamp, burning 1·48 ounces of oil per hour as a test for ascertaining the illuminating power of all other lights, and that it is therefore advisable to observe the conditions laid down and observed by him.

Now this is the mode of proceeding he adopted in his experiments on the carcel lamp:—

"I took," he says, "two lamps of similar construction; they were lighted at the same time, and I measured the ratio of their intensity. I then extinguished one of them, without touching the wick, and stopped its motion. An hour afterwards, I set it again in motion, and relighted it, without touching the wick; it was then in the same condition as at the time of the first comparison, and I measured its intensity with reference to the former. These experiments I repeated every hour."

Thus, at each observation, after observing the weight of the lamp when filled with oil, the comparison should be made at the moment when the lamp is just lighted. It should then be put out and stopped, and afterwards set in motion and relit at every succeeding observation.

It is only under the above circumstances that the carcel lamp is a true test of light, for it was under similar conditions that it served to show that the light of a stearine candle, of about five to the pound, was equal to 14·30—that of the carcel lamp being represented by 100—which gives the value of the light of that lamp as equal to 6·993 of the above-mentioned candles.

This mode of estimating by candles is, moreover, a point of great importance, for it must be well known to all that many causes may produce variations in the illuminating power of a carcel lamp. For example, the diameter of the burner, the composition of the wick, the form of the chimney, its diameter and height, and, lastly, the quality of the oil and the height of the neck of the chimney above the bottom of the flame.

Thus, when it becomes necessary to use a carcel lamp in any experiment, we should always begin by equalizing its light, and bringing it to the required intensity of 6·993 candles, by means of a stearine candle of the best quality. This is all the more important, as it is sufficient to raise or depress the neck of the chimney in order to vary the luminous intensity of the flame without affecting in any way the consumption of oil.

In addition to these too frequently neglected precautions, it would be well to verify the proportions of the lamp proposed to be used; and as we have in our possession a pattern lamp made by Carcel, of the same date as the lamp used by Peclet in his experiments, and upon the same model as that upon which it was constructed, we are enabled to furnish our readers with full particulars on this subject.

Diameter of the current of air inside the burner	0·59 inch.
Diameter of the outer circumference of the glass	0·86 „
Diameter of the gallery, or slide	1·77 „

The wick should fit the burner easily, but without creasing.

Chimney—Inside diameter at the base	1·61 inch.
Diameter inside the neck	1·02 „
Height of the neck	1·97 „
Height of chimney above the neck	9·85 inches.
Height of the wick when lighted	0·59 inch.

Under the above conditions, and with perfectly pure oil, this lamp burns 1·48 ounces avoirdupois of oil per hour, and gives an illuminating power equal to 7 stearine candles (6·993), the flame being at its maximum height, but without redness or smoke.

The importance of these details will be readily understood. It takes so little to produce a considerable variation in the power of the light, and thus to give rise to illegal claims, that it is impossible to be too careful in this respect; and yet how few inspectors trouble themselves about these essential details! The contract takes for its standard the carcel lamp. Take, then, the carcel lamp! and if, during the course of our observations, it *should* vary from 3 to 17 per cent., it matters but little to us! And thus, infractions of the contract are charged against the manufacturers, which have no existence in fact!

It is true that the object we proposed to ourselves was the defence of the interests of gas consumers, and we have spared no efforts to secure for the future gas of truly good quality. But, for this very reason, the gas companies have a right to demand our assistance when their interests are prejudiced by unfair requirements. The more we have required of them in the interest of the consumer, the greater is their claim on our support when they in their turn suffer injustice.

Certainly, none have contended more earnestly than we have that the gas supplied to consumers should in all cases be of the specified quality. We have given our readers full instructions, to enable them and all the world to ascertain whether the gas companies fulfil their obligations as to the quality of the article supplied; but it is also requisite that the consumers, or the inspectors whose duty it is to test the gas, should know how to avoid excesses. Everything has its limits and its excesses; every excess is an infraction of legal right. Thus, to estimate the illuminating power of gas, without attending to all the necessary conditions affecting the standard lamp, and from the observation thus made to impose a penalty, is an excess and an illegality. Having four different classes of burners upon which to test the quality of the gas, to select only the most unfavourable without trying the others, and from the result obtained to impose a penalty, is again an illegality.

We call earnest and serious attention to this subject. We beg our readers to pass their eyes over the different articles we have written on the irregular introduction of the class of street burners now in use, and they will then be convinced of the necessity of reforming the objectionable clauses in the contracts entered into on false and erroneous principles, and of adopting an uniform standard, by which, at any moment, the quality of the gas can be ascertained.

EMILE DURAND.

ON THE VALUE OF THE SEWERAGE OF PARIS APPLIED AS MANURE.

By the EDITOR of the "*Annales*."

(*Annales des Ponts et Chaussées*, March, 1859.)

The numerous writers, both French and foreign, who have given their attention to the utilization of the sewerage of large towns for the purposes of agriculture are far from agreeing in opinion as to the fertilizing power of the material. Their calculations are generally based on very vague assumptions, or on physiological data derived from individual observation, which it would be impossible to apply, without manifest error, to our thickly-inhabited cities.

It appears to me that the first element of every well-considered project for the sanitary improvement of towns ought to be an accurate computation of the quantity of sewerage actually collected, and capable of being applied to agricultural purposes. For this purpose a series of analyses was undertaken in 1854 at the *Ecole des Ponts et Chaussées*, the principal results of which I proceed to detail.

Instead of obtaining the required product, as had been done hitherto, by multiplying the population of Paris by a coefficient derived from individual and detached observations, I based my analyses on the average collection from the whole city. By dividing the totals thus obtained by the number of inhabitants, we arrive at an average result applicable, without error, to large towns under conditions similar to those of Paris.

I could have wished to defer the publication of this notice, and combine all the particulars in a work, now nearly completed, on the "Drainage of Towns with reference to Agriculture;" but I fancied that these calculations might be useful to many engineers at a time when the city of Paris, and, following its example, nearly all the large cities of France, are so earnestly engaged in considerations of this nature. The numerous inquiries which have been addressed to me on this subject remove any lingering doubt as to the interest taken in the question by the great mass of our brother engineers.

The sewerage of a large town consists of—first, mud and refuse swept from the public streets; secondly, the contents of cesspools; and, thirdly, drainage water.

The first class of materials has been long employed by farmers in the neighbourhood of Paris, and of all cities of considerable importance. Their value and application are perfectly well understood. Owing to their cumbrous and embarrassing nature, which renders their daily removal imperative at any cost, these materials cannot be transported to any great distance. They are necessarily consumed within a very narrow circuit, where their extremely low price enables them to compete successfully with every other kind of manure attempted to be introduced. Besides this, the completion of the sanitary improvements of Paris will naturally have the effect of diminishing, in favour of the two other descriptions of sewerage, the quantity and the fertilizing power of the above-named substances; and for this reason it has been thought unnecessary to enter into any detailed consideration of them in this place. We shall confine ourselves to the examination of the two other classes of materials.

The analyses of the various samples examined were all conducted in the same manner. About a pint, or a pint and a half, of the sewerage matter was placed in a glass globe, weighed with an assay-balance, and placed in a salt-water bath, boiling at 226°. By means of a stopper attached to the mouth of the vessel, and fitted with glass tubes conveniently arranged, the products of distillation were collected in an ascertained volume of proof sulphuric acid, and a current of dry air passed over the solid residue to complete its desiccation. When there was no longer any variation in the weight of the vessel, it was carefully weighed; and on deducting its weight when empty, we obtained the weight of the solid residue (dried at 226°) which had been contained in the volume of liquid operated on. The ammonia collected in the sulphuric acid was measured with the ordinary precautions, care being taken to drive off the carbonic and sulphurous acids condensed in the liquid.

The vessel was then broken in order to detach the solid product and to determine the quantity of nitrogen contained in it. This has always been effected by means of lime and soda and the oxide of copper. Both these methods have constantly given similar results, the differences in which have not appeared to us to exceed the limits which might be fairly assigned to substances so complex and so variable in their composition.

It has been observed, moreover, by comparative experiment, that the product of evaporation effected in the open air in a pan heated in a salt-water bath differs in no respect from that previously described in the glass globe. The analyses have consequently been performed on the solid residue obtained by either process. We will now give the results of these analyses.

Our operations were not confined to the matter taken from any particular cesspool or cesspools, taken by themselves, and which might have differed more or less from the average; but they were directed to the combination of the whole of these deposits, as taken from the iron pipe laid down between the outfall-tank and Bondy. The composition of these matters doubtless varies from one day to another, and to attain mathematical precision on this question it would be necessary to extend our experiments much further than circumstances permitted. As it is, the precautions observed in these experiments afford us the assurance that the results approach very closely to the truth, and present an amount of exactitude quite sufficient for practical purposes.

It would answer no useful purpose to recount the details of the various analyses; suffice it to say, that the sewerage liquid taken from the iron pipe at Bondy contains on the average in every litre (1·76 pint) as follows:—

	Gr.	Gr.
1. Nitrogen in combination—		
Nitrogen in the ammonia extracted by distillation	3·0694	
Nitrogen in the solid residue	0·9470	0·9470
Total nitrogen	4·0164	
2. Organic matter, not including nitrogen—		
Carbon	9·5723	
Hydrogen	1·5895	
Oxygen	3·4580	
		14·6198
3. Mineral matter—		
Sulphuric acid	0·6161	
Hydrochloric acid	2·4471	
Phosphoric acid	1·2212	
Soda and potash	2·0814	
Lime	1·0431	
Magnesia	0·0782	
Alumina and peroxide of iron	1·0931	
Silica and clay, insoluble in acids	1·5967	
Carbonic acid and other matter	1·3771	
		11·5540
Total solid residue in each litre		27·1208

It was thought interesting to examine at the same time the composition of the liquid in the reservoirs at Bondy subsequently to the deposit of solid matter afterwards manufactured into *poudrette*. The greater part of this liquid is at present poured into the Seine; the remainder is employed in the preparation of ammoniacal salts in the same establishment at Bondy. The refuse of this process is likewise discharged into the river. We subjoin the proportions of the several component parts of these two liquids:—

	Liquid from the Reservoirs at Bondy.			Residue of the Distillation of Ammoniacal Salts.	
	Gr.	Gr.		Gr.	Gr.
1. Nitrogen in combination—					
Nitrogen in the ammonia separated by distillation	4·536		...	1·4755	
Do. in the solid residue	0·503	0·503	...	0·3332	0·3332
Total nitrogen	5·039		...	1·8087	
2. Organic matter, not including nitrogen—					
Carbon	3·5060		...	2·0250	
Hydrogen	0·2034		...	0·2759	
Oxygen	1·2516		...	1·4699	
		4·961	...		3·7708
3. Mineral matter—					
Sulphuric acid	1·0888		...	0·3156	
Hydrochloric acid	2·0513		...	3·6021	
Phosphoric acid	0·2256		...	0·1281	
Soda and potash	2·8088		...	4·8136	
Lime	0·0305		...	0·0717	
Magnesia	—		...	—	
Alumina and peroxide of iron	0·1809		...	0·1221	
Silica and clay, insoluble in acids	0·0793		...	0·0558	
Carbonic and other matter	0·2808		...	0·2870	
		6·746	...		9·3960
Total solid residue per litre	12·210		...		13·5000

We can now easily determine the value of the entire mass of fertilizing agents contained in the sewerage matter of the Paris cesspools.

In 1853 the total quantity of the sewerage of Paris amounted to 354,000 mètres cube, apportioned as follows:

	Mètres Cube.
Muddy liquid brought down through the pipes	163,000
Thicker matter, brought down by boats	39,000
Water discharged through the sewers	152,000
Total	354,000

The figures in the first analysis above given refer to the muddy liquid brought down through the pipes. The water discharged through the sewers would be, on the average, of similar composition.

As regards the matter brought down by boats, it is evidently less rich in nitrogen. Considering its variable character, a very extended series of experiments would be necessary in order to determine its general composition. Very likely we should not be far from the truth in supposing that, for equal weights, it only contains from one-third to one-half of the nitrogen found in the liquid matter. It would therefore be necessary to reduce its volume in that proportion, in order to calculate the quantity of nitrogen contained in it. This reduction would be inconsiderable; and, besides, it is certainly more than compensated for by the increase in the population of Paris since 1853.

We will assume, then, in order to arrive at some definite datum, that the

whole bulk of the sewerage of Paris amounts at present to 354,000 mètres cube per annum, the composition of which is generally similar to that detailed in the foregoing analysis.

On this assumption, we have only to multiply by 354,000,000 the various figures in the above analysis, and we shall see that the yearly aggregate of the sewerage of Paris, for a population of nearly 1,000,000 inhabitants, contains:—

	Kilog.	Kilog.
Nitrogen in combination—		
Nitrogen of the ammonia in the liquid matter	1,086,567·60	
Ditto of the solid residue	335,238·00	
		1,421,805·60
Organic matter, not including nitrogen—		
Carbon	3,388,488·00	
Hydrogen	562,506·00	
Oxygen	1,224,132·00	
		5,175,126·00
Mineral matter—		
Sulphuric acid	218,099·40	
Hydrochloric acid	866,273·40	
Phosphoric acid	432,304·80	
Soda and potash	736,815·60	
Other mineral products	1,836,622·80	
		4,090,116·00
Grand total		10,687,047·60

Or, in a more simple form—	Kilog.	
Nitrogen in the ammonia	1,086,567	
Ditto in the solid matter	335,238	
		1,421,805
Organic matter, exclusive of nitrogen	5,175,126	
Mineral matter	4,090,116	

The foregoing figures enable us to calculate, by simple proportion, the composition of the sewerage of almost every town in France, inasmuch as they are, with reference to this service, under the same conditions as Paris.

The quantity of nitrogen contained in the sewerage of Paris is equal to that which would be found in 355,451,250 kilogrammes of ordinary farm-yard manure, yielding 4 per cent. of nitrogen. Assuming that the annual dressing of one hectare would take 20,000 kilogrammes of manure, we shall see that the nitrogen contained in the sewerage matter would be sufficient to dress 17,772 hectares per annum. But it is well known that manure of this kind is much more active than ordinary farm-yard manure, and that it contains a much larger quantity of useful mineral salts. To institute a more rigorous comparison, let us turn to the practice of the farmers in the neighbourhood of Lille, who employ the particular manure we are speaking of. Amongst the best farmers in that district, they use for a strong dressing about 18 mètres cube of Flemish manure, containing 48·6 kilogrammes of nitrogen, according to analyses made at the same time with those forming the subject of the present article. From this it would appear that the matter taken from the cesspools of Paris would suffice for dressing 29,250 hectares annually, or, in round numbers, 30,000. The actual value of these materials would therefore amount to a million and a half or two millions of francs.

Furthermore, it is well known that this manure should not be used by itself, but that its action should be alternated with that of other manures containing a greater abundance of carbon and less mineral salts. If it were desired to apply the whole sewerage of Paris to agricultural purposes, we must distribute it over an extent of arable land at least triple of that which it could annually fertilize, say, in round numbers, from 90,000 to 100,000 hectares.

When we come to consider the expense attending the transmission of these materials in vessels hermetically closed, either by railway or by canal, we soon perceive that their actual value is not sufficient to defray the cost of carriage for such a distance as would be necessary to pass beyond the zone within which the road-sweepings are used, and to reach the more remote districts where alone they could be advantageously employed.

In order to effect this removal, so necessary to the sanitary welfare of the city and to the interests of agriculture, we cannot do better than fall back upon the employment of pipes and steam forcing-pumps, as was done by M. Mary, Inspecteur-Général, for the first time, and with such successful results, in the construction of the reservoir. Under these circumstances, the transmission would be effected at such an outlay as would be in just accordance with the value of the liquid under consideration.

It might be apprehended that for the first few years the use of this manure would not become so extensively adopted in the rural districts, and that some miscalculation would result therefrom. But the exhibition of the advantages derived from it would speedily make converts of the most incredulous; and, besides, as M. Boussingault has remarked, nothing more would be necessary to ensure the speedy consumption of all the liquid sent out than the simple authorization of the cultivation of tobacco (to which this manure is so necessary) in those districts traversed by the main pipe.

The very correct and interesting particulars given by M. Husson, in his "Memoir on the Supply of Food to Paris," have recently furnished an indirect corroboration of these analytical results of a former date.

I have calculated the quantity of nitrogen and mineral matter contained in the quantity of food annually consumed by each person in Paris, and I have thus been enabled to compare the weight of these substances when taken in at Paris, according to the figures of M. Husson (page 140), with that of the same materials when discharged into the sewers, as given in my analyses. To avoid the insertion of long tables, which would occupy three or four pages, I shall confine myself to the following observations:—

In the sewerage matter brought down to Bondy, we only find from one-half to two-thirds of the mineral salts contained in the food consumed. In the case of the nitrogen, the loss is still more considerable. The sewerage contains no more than one-third of the quantity originally found in the food.

These circumstances are easily explained, and they confirm the figures given in the analyses.

Several of the cesspools in Paris, notwithstanding the police regulations, are not water-tight; and in many quarters, some of them have never been emptied. In addition to this, a large proportion of urine is discharged in the public streets; so we may easily understand how a considerable portion of the constituent elements, which ought to be found at Bondy, would be lost in various ways. As regards the loss of nitrogen, which is comparatively much greater than that of the other bodies, it is too readily accounted for by the infectious exhalations perceived in the streets and houses of Paris.

The foregoing figures justify only too well the universal complaints to which the vicious system of cesspools and drainage in the capital gives rise. More than 3,500,000 kilogrammes of nitrogen are lost to agriculture every year in Paris; and of that quantity, 2,000,000 at least are dispersed in the form of infectious miasmata, which contaminate the atmosphere, and contribute in a great degree to the insalubrity of the city, the atmosphere of which would thus resemble, in its composition, the exhalation from an enormous dung-pit.

The composition of the sewerage water, of which we are now about to speak, varies much more from day to day, and from place to place, than that of the cesspool soil. In order to arrive at a tolerably correct estimate of the value of this liquid, it would be necessary to take samples hourly from the various sewers of Paris; to mix together these different samples, in quantities proportionate to the flow of each, and to analyze the mixtures thus obtained every day for a considerable period of time. It would be impossible to undertake such an investigation without the active assistance of the municipal authorities. On that account I have been forced to confine my analyses to the limited number of samples I could procure without trespassing too far on the indulgence of the engineers of the sewers department. These samples have nevertheless been taken under circumstances approaching as nearly as possible to a fair average; so that the results obtained, which also agree very well with those derived from another series of observations, cannot be very far from the truth.

Subjoined are some of the results obtained:—

1. Water from the great sewer. This water yielded 9·187 gr. of solid residue per litre, containing—

	Gr.
Nitrogen	0·137
Organic matter, exclusive of nitrogen	2·849
Ashes	6·201
Total	9·187

During distillation, a quantity of ammonia was disengaged, representing about 0·03115 gr. of nitrogen.

Thus, this water would contain 0·168 gr. per litre of nitrogen in combination.

It appeared to me useless to proceed further with the analysis of the solid residue, as it was too variable in character to afford any useful information.

2. Water from the Rue de Rivoli sewer. This water yielded 2·138 gr. per litre of solid residue, containing—

	Gr.
Nitrogen	0·00213
Organic matter, exclusive of nitrogen	0·62987
Ashes	1·50600
Total	2·13800

During distillation, a quantity of ammonia was disengaged, representing 0·04367 gr. of nitrogen. This water would, therefore, contain 0·0458 gr. of nitrogen in combination.

Another sample of water taken from the same sewer two years afterwards contained in every litre—

	Gr.
Matter in solution	1·242
Solid matter in suspension	0·484
Total	1·726

This solid residue contained 0·0193 gr. of nitrogen. During distillation a quantity of ammonia was disengaged, representing 0·0389 gr. of nitrogen; so that this liquid would contain 0·0582 gr. per litre of nitrogen in combination.

It will be seen that the water from the Rue de Rivoli sewer is by no means so rich as that from the great sewer; but this difference is mainly attributable to the solid residue. The ammonia disengaged during the distillation of the three liquids corresponds, in fact, to proportions of nitrogen, differing very slightly from each other, viz.:—

0·0311 gr., 0·0436 gr., and 0·0389 gr.

The composition of the water in the Rue de Rivoli sewer approaches more nearly to the conditions which will hereafter prevail in all the sewers of Paris than does that of the sample of the water from the great sewer given above. In the investigations which now engage our attention, it is, moreover, desirable to prefer the minimum to the maximum quantities. In the following calculations, therefore, we shall not take for the composition of the sewerage water the average of the results furnished by the three samples above given, which would give 0·09 gr. of nitrogen in combination to every litre of foul water. We shall also leave out of account the first sample from the Rue de Rivoli sewer, which it is evident was not sufficiently charged, on account of the small number of houses connected with it, at the time of taking the sample. In the absence of more complete information, we will take 0·0582 gr. as the amount per litre of nitrogen in the sewerage waters of Paris. This figure is most probably below the reality, and we shall incur no risk of exaggeration in adopting it.

As regards the weight of the matter in solution or in suspension, it may be estimated on the average at nearly 2 gr. per litre.

In order to ascertain the quantity of fertilizing matter carried off and lost in the sewerage waters, we must ascertain their volume and their average composition. On these two points great uncertainty exists. As to the volume brought down, or, more correctly, the volume of liquid equally concentrated with that which formed the subject of our experiment, it might, I believe, be estimated at about 21,900,000 mètres cube per annum.

Proceeding on these hypotheses, the sewerage waters of Paris would contain—

	Kilog.	Kilog.
Nitrogen in the ammonia	851,910	
Ditto in the solid residue	420,480	
		1,272,390
Organic matter, exclusive of nitrogen		12,899,100
Mineral matter		30,879,000
Total		45,050,490

These last figures would be rather below than beyond the truth. In investigations of this nature, if any errors be committed, it is better that they should be in this direction, as we can then be always well assured that we are not attributing to the substances under examination any more than their real value. They left me, nevertheless, in a state of great uncertainty, and I thought it absolutely necessary to seek for some check upon them.

The memoir by M. Husson on the Consumption of Food in Paris, to which I have before alluded, affords again a remarkable verification of my former analysis.

The matter lost in the sewers consists principally of animal fœces, house water, and urine discharged in the public streets. We take no account of the cesspool soil which may have found its way into the sewers. This substance is accounted for under its proper head, and has no influence on the analyses of the sewerage water taken up during the day.

It is impossible to base upon any data, however correct, an estimate of the fertilizing value of house water. As regards the horses which traverse our streets, we can take an exact account of them. According to M. Husson

(page 71), there are daily at work in Paris 46,000 horses, of which number 22,400 are stabled within the city, and the remainder pass the night in the suburbs. Now, one horse furnishes daily about 100 grammes of nitrogen in combination, in the form of fertilizing matter. The quantity of nitrogen thrown in this way into the sewers may then be calculated as follows:—

	Kilog.	Kilog.
22,400 horses stabled in Paris. . . .	0·100 × 365 × 22,400 =	817,600
23,600 horses lodged in the suburbs, and only passing about half their time in Paris	0·050 × 365 × 23,600 =	430,700
Total nitrogen		1,248,300

When we add to this amount the quantity derived from the horses which bring part of the provisions and building materials, &c., into Paris, and which are not included in the foregoing figures, together with the evacuations of other domestic animals, the waste water from the houses and public urinals, we shall see that the estimate of the quantity of nitrogen contained in the sewerage waters—as founded on the calculation of their volume and on the analyses—is lower than that based on the synthetical data given above, and in other respects perfectly accordant with them. It may, therefore, be safely adopted as sufficiently correct for the investigations on which we are engaged.

To sum up our remarks, the sewerage waters of Paris carry off to the Seine annually at least 1200 kilogs. of nitrogen; but their enormous volume and diluted form prevent their being used in their entirety in agriculture in a direct and economical manner. The best way to employ them would be to devote one portion of them to the irrigation of meadows, as is done at Edinburgh, Milan, &c., and to extract from the portion not so employed its fertilizing elements by a suitable application of the processes of precipitation by lime.

GAS TESTING IN MARYLEBONE.—At the last meeting of the vestry, Dr. Bachhoffner asked permission to withdraw a resolution he had on the paper relative to the supply of gas, and the appointment of a person to test the quantity as well as quality of the gas supplied to the public lamps of Marylebone. He had much pleasure in informing the board that the whole of the apparatus for testing the gas was complete, and that Dr. Thomson, the medical officer of health, had in the most kind manner voluntarily offered to undertake the charge of the apparatus, and himself test the quantity and quality of the gas supplied by the Imperial Company, and make a report to the vestry every week. In answer to Mr. Belton and other gentlemen, Dr. Bachhoffner said that Dr. Thomson did not require any extra remuneration for this service, but would perform it as a part and parcel of his other duties.

THE MANCHESTER GAS CONSUMERS' ASSOCIATION.—The *Manchester Guardian* of the 1st inst. contains the following communication from the Chairman of the Consumers' Association:—

Sir,—The JOURNAL OF GAS LIGHTING, in its last number, has an article on the Manchester gas question, which bears evidence of having been skilfully prepared by authority, and which this association would have passed unnoticed, but for the publicity it has obtained through your columns.

In commenting on the object of the "organized agitation" at present existing in Manchester, it "cordially agrees" with the necessity of the hiring of meters, but deprecates the reduction of the price to the Liverpool standard of 3s. 9d. as "premature and unwise."

The large "non-dividend" bearing capital of the Liverpool Company is urged as the first reason, and, but for disgraceful mismanagement, Manchester no doubt would have been in an equally favourable position. In the year ending June, 1858, the profits in Manchester were £47,000 less than in Liverpool. The gas-fitting trade of the Liverpool Company is the second alleged reason, and it is implied that the "agitators" in Manchester are desirous of the adoption of that system into this city. The Manchester Gas Consumers' Association utterly repudiate such antiquated practices. They desire to adopt the good, and avoid the defects of the Liverpool Company. The profits arising from their gas-fitting trade last year were a little over £1000, while for the hiring of meters (the second object of the Manchester Association) they received over £8000.

This system of hiring meters, securing such an immense annual income, we are desirous of introducing in Manchester, but we will not in any manner sanction the corporation interfering with the large number of respectable tradesmen who are now engaged in the trade of gas-fitting. We are now in favour of free trade both in meters and fittings, and, by the adoption of our principles, the tradesmen of this city would secure such increased employment in the lighting of the 50,000 dwellings which are at present without gas; that, in all probability, three or four years would elapse before their labours would be overtaken.

The JOURNAL OF GAS LIGHTING remarks that, with the reduction of gas from 5s. to 4s. 6d., "the consumers" are not satisfied. Hence, sir, is this organized association. We demand that the gas be reduced to 3s. 9d. We will submit to no other terms. The agitation which you have witnessed at the present election of councillors foreshadows the storm of October, 1860. Rely on it, that no gentleman will then be returned who is not fully pledged to our views.

We deprecate this agitation, and desire that it should cease, and for that object the corporation may as well at once place themselves in unison with the expressed wishes of the citizens, and, by a liberal vote, deprive this association of its powers of agitation.

SUPPLY OF WATER IN THE ISLE OF WIGHT.—A project has been broached to form a company for the supply of water and gas to Sandown, Shanklin, Brading, and places adjacent. The circular states "that the Newchurch and Shanklin valleys are encumbered with water, now flowing to the sea through Brading Harbour, amply sufficient, if properly dealt with, for the supply of the district, and for an auxiliary supply for Ryde. The plan shows a reservoir, to be formed upon Ashey Down. The Ryde works has one already formed at this place, and are in want of more water than they can get from the Bloodstone springs. A good opportunity to make arrangements for supplying the whole of the eastern part of the island with a bountiful supply of water, economically, would be thus afforded."

SOUTHAMPTON.—The secretary of the Southampton Gas Company has addressed the following letter to the editor of the *Hampshire Independent* in reference to a paragraph announcing the projected formation of a second gas company in that town:—

Sir,—As the communication made in your last impression respecting an intention to set up another gas company in this town might mislead some persons, and cause them to yield to any overtures which may be possibly made to them by the parties interested to get their names as subscribers to such an undertaking unwittingly, I am inclined to offer a few observations to correct any misapprehensions that may be entertained by any one on the subject.

I shall state the law in as concise a form as possible.

No registered joint-stock or any other kind of gas company has the legal right to break up the streets of this town for the purpose of laying down pipes, *even with the consent of the Local Board of Health, the Surveyors or Trustees of the Highway, or of the owners of the soil;* and any attempt to do it, with or without the concurrence of any such authorities, would render such person or persons indictable for the offence.

The object of the Gas Act was to protect the public against any monopoly created by the Special Act, and it would, therefore, be great temerity for any one to encourage an attempt to contravene this intention of the Legislature by an effort to establish any company adverse to the interests of the present company.

The existing company have always shown the most ready disposition to surrender their own opinions to the desires of the Local Board of Health, and have also supplied the town abundantly with gas of good quality at a moderate price. They have likewise constructed works, at a great expense, adequate to any increased demand that may be required for the supply of the town and the surrounding districts for many years to come.

MELBOURNE, AUSTRALIA.—Mr. Stephen Hutchinson, the eldest son of the late Mr. Hutchinson, formerly of the London Gas-Works, Vauxhall, has succeeded Mr. A. Kennedy Smith as engineer to the Melbourne Gas Company, at a salary of £800 per annum, with house, fuel, light, and forage for one horse in addition. The company appears to be in a highly flourishing condition, the shares being at 52 per cent. premium. The last dividend was at the rate of 12 per cent. per annum, but the profits realized were 18½ per cent. The price of gas to private consumers is 20s. per 1000 feet, and £17 is paid for each public lamp. English coal costs £4 per ton, and colonial coal £2. 10s.

EXPLOSION AT THE SURREY CONSUMERS' GAS-WORKS.—On Friday morning last, about 10 o'clock, much alarm was occasioned in the locality of Rotherhithe Wall by a report resembling an explosion of gunpowder. Upon inquiry it was ascertained that an accident of a most serious character had occurred at the Surrey Consumers' Gas-Works, which resulted in the destruction of a portion of the buildings, and unhappily in loss of life. At the time mentioned an explosion took place in ths meter-room, owing to an escape from one of the joints of the pipes, causing an accumulation of gas, which became ignited, as is supposed, by a spark from the adjoining smith's shop. The effect of the explosion was to reduce the meter-room to a mere heap of rubbish, and considerably to damage the smiths and carpenters' shops. After the confusion caused by this unfortunate event had somewhat subsided, a search was make for those who were employed in and near the building, it being feared that several persons were injured. On removing the *débris*, two men were found, who were at once removed in an insensible state to Guy's Hospital. One of these unfortunate fellows had sustained a compound fracture of the thigh, and the other, who was the gatekeeper at the works, a severe injury to the spine and hip-joint, not from the explosion itself, but from the falling of the building upon them, neither of them being employed in the meter-room at the time of the accident. The latter, who was a man advanced in years, died shortly afterwards from the injuries sustained. An inquest was held on the body yesterday afternoon, and a verdict of accidental death returned.

Price Current.

CASTINGS, PER TON.

Average Weight of Cast-Iron Gas-Pipes, per Yard.

1¼ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lbs.

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle.	Wales.	Yorkshire, Derbyshire, and Staffordsh.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Pig Iron, No. 1	3 15 0	2 12 6	3 5 0	3 5 0	3 10 0
1¼ and 2 inches Socket-Pipes	7 0 0	6 0 0	6 5 0	6 10 0	6 15 0
2½ and 3 ,, ,,	6 10 0	5 10 0	5 15 0	6 0 0	6 5 0
4 and 5 ,, ,,	6 0 0	5 0 0	5 5 0	5 10 0	5 15 0
6 in. and upwards ,,	5 15 0	4 15 0	5 0 0	5 5 0	5 10 0
Retorts, 1st fusion, hot blast	5 10 0	4 10 0	4 15 0	5 0 0	5 5 0
,, 2nd ,, cold ,,	6 10 0	5 5 0	5 10 0	6 0 0	6 5 0
Tank Plates, ⅜ thick and above	6 0 0	5 0 0	5 5 0	5 10 0	5 10 0

WROUGHT-IRON TUBING,

Subject to 40 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 12 ft., perft.	1 8	1 0	0 10	0 7	0 5	0 4½
,, ,, ,, 6 in. to 18 in., each	3 0	2 0	1 9	1 3	1 0	0 9
Connecting-Pieces, or Long Screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, Springs, and Elbows—wrought iron	3 9	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, wrought or cast	4 6	3 0	2 6	2 0	1 6	1 2
Iron Cocks	17 6	9 6	7 6	4 6	3 3	2 6
,, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Plain Sockets [Nipples	1 3	0 9	0 8	0 6	0 5	0 4
Syphons, 2 quart	1 0	0 8	0 7	0 5	0 4	0 3
	15 0	14 0	13 6	13 0	12 0	—

COALS, PER TON.

Newcastle.—Unscreened.	6s. 3d.
Whitwell Primrose	
Medomsley, Eighton Moor, and Burnhope	6 6
Pelaw	6 9
New Pelton, Peareth, South Pelaw, Washington Hutton, and South Peareth	7 0
Pelton	7 9
Ramsay's Newcastle Cannel	16 0

Scotch Cannel.	
Boghead, at Leith	45s. 0d.
Kirkness, best	23 0
Capeldrae, 1st quality	20 0
,, 2nd ,,	12 6
Lesmahago, at Glasgow	25 0
,, ,, Leith	27 6
Arniston	22 0
Wemyss	20 0
Knightswood	18 0
Pirnie	15 0

SUNDRIES.

Best Newcastle Fire-bricks	per 1000	50s. 0d.
Cliff's Fire-bricks, at Wortley	per 1000	57 6
Ingham's Fire-bricks, at Wortley	,,	55 0
Fire-clay Retorts	per foot run, 5s. 6d. to	7 0
Tough Cake Copper	per ton	£107 10s.
English Pig Lead	,,	21 15
Welch Bar Iron, in London	,,	6 15 0
Foreign Spelter	per ton	£20 17 6
English Block Tin	,,	136 0 0
Banca	,,	142 0 0

FREIGHTS.

Coastwise—Newcastle.—Per Ton.	
Chatham & Rochester	5s. 9d.
Cork	9 0
Dover	7 0
Dublin	10 0
Exeter Quay	10 6
Folkestone	7 6
London (Pool)	5 9
Lowestoft & Yarmouth	5 3
Lynn	—
Portsmouth	7 6
Plymouth	8 0
Ramsgate	7 9
Whitstable	—
Weymouth	6 0

Foreign.—Per Keel.	
Boulogne and Calais	£8 0 0
Barcelona	23 0 0
Bordeaux	14 10 0
Cadiz	14 10 0
Copenhagen	8 15 0
Dieppe	8 15 0
Genoa	22 0 0
Hamburg	9 5 0
Havre	9 15 0
Leghorn	22 0 0
Lisbon	16 0 0
Rotterdam	7 15 0
Stettin	9 5 0
Trieste & Venice	£25 to 26 0 0

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WANTED, two or three men as above, of whom references as to steadiness and ability will be required.

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one of which answers the purpose of THREE ordinary Valves, as applied to Purifiers, or in shutting off and passing Station-Meters, Governors, or other apparatus, while the Connecting-Pipes are also much simplified.

RETORT SETTINGS,
designed to be heated by Tar alone, and with a total absence of Smoke.

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Also, High-pressure Cocks, Hydrants, Closets, and all Water-Fittings.

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Are prepared to supply
STANDARD CUBIC FOOT MEASURES
of the capacity required by the 2nd Section of this Act, as well as
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Accurately graduated thereby.

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N.B.—Public and Private Establishments fitted by Gas or Hot Water.

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MANUFACTURERS OF EVERY DESCRIPTION OF
FIRE BRICKS, CLAY RETORTS, LUMPS, TILES,
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A large stock of Fire-Clay Goods always on hand in London, at the lowest wharf prices, at Messrs. CHRISTIE & Co.'s Wharf, 64, Bankside, SOUTHWARK.

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M. SHEEN, Gas and Railway Lantern Maker, 90½, Holborn Hill, begs to inform Managers of Gas-Works, &c., that she continues to contract and supply Lanterns on reasonable terms, and keep them in repair by the year.

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Station and Experimental Meters, Gas Pressure Registers, Gauges, Experimental Gasholders, Governors, Slide Valves, &c. &c.
W. and G. would respectfully call the attention of Gas Engineers and Managers to their Station-meters, having made and erected the largest in use at the present time, two of which may be seen at the Stockport and Liverpool Gas Works, on application to the respective Engineers.

LESMAHAGO GAS COAL.

JAMES FERGUSON and CO., Lessees of the Auchinheath and Craignethan Gas Coalfields (the most extensive and valuable in the parish of Lesmahago), respectfully intimate to the Managers of Gas-Works and Consumers of Gas Coal, that they are prepared to ship the best quality of the above well-known COALS at Glasgow or Leith; and also to deliver them at the railway stations upon, or connected with, the Caledonian Railway, to any extent which may be required.
Price, free on board, or delivered at the railway stations, may be learned by addressing James Ferguson and Co., Gas-Coal Works, Lesmahago.
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MR. ALEXANDER STRATTON,
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THE UXBRIDGE AND HILLINGDON GAS CONSUMERS' COMPANY having been disappointed, in consequence of a person tendering in reply to their former advertisement, and whose Tender was accepted, not being able to find the necessary amount of money to take the Works, are again open to receive applications to take the said Works on Lease.
Full particulars may be obtained, and a Draft of the proposed Contract inspected, on application to the Secretary, Mr. W. GARDINER, UXBRIDGE; or to MR. ALFRED PENNY, Engineer, Wharf Road, City Road, LONDON. Tenders to be sent to Mr. W. GARDINER, Solicitor, UXBRIDGE, on or before the 10th of November.
The Company do not bind themselves to accept the lowest or any Tender.

WM. RICHARDSON and CO.,
SPRING GARDEN IRON-WORKS,
DUDLEY, near BIRMINGHAM,
Manufacturers of Gas Apparatus in all its branches.
A large assortment of New and Second-hand Gas Apparatus constantly for Sale.
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FOR SALE, several lengths of Hy-DRAULIC MAIN, 14 inches diameter and 6 feet 9 inches long, with 7 holes for Dip-Pipes.
Also, 4-inch ASCENSION-PIPES, 3-inch ARCH and DIP PIPES, and D MOUTHPIECES, all in excellent condition, and will be sold at a very low price.
To be seen on application to the ENGINEER, at the Equitable Gas Company's Works, Lupus Street, PIMLICO.

WROUGHT-IRON Guides for Gas-HOLDERS, when Trussed upon scientific principles, are more capable of resisting strains, in every direction, than Cast Columns of any form can be; and weigh only one-fifth as much as the latter. Designs and Working Drawings for Guides and Ties can be obtained of the Inventor, CHARLES DIXON, C.E., Chichester, SUSSEX.

EIGHTON MOOR GAS COALS.—Parties wishing to be supplied with these first-class Gas Coals will please to apply to Mr. MATTHEW NESBIT, EIGHTON MOOR OFFICE, NEWCASTLE-UPON-TYNE. These coals are well known as among the richest in gas, and working the roundest on the River Tyne. They are extensively used by metropolitan gas works.

TO GAS & WATER COMPANIES, ENGINEERS AND FITTERS.

GARSIDE'S Registered Tube-Vice holds all sizes of Wrought-Iron and Brass Tubes with the greatest firmness and least possible pressure; consequently it is not so liable to split or damage the Tubes as the ordinary Vice, and considerably facilitates the Workman, who may do almost double the quantity of work. Also,
GARSIDE'S IMPROVED MAIN-DRILLING CLIPS, for Drilling Holes for Service-Pipes. With this instrument the perforation of Pipes for the attachment of smaller Tubes can be effected with great ease and precision. Likewise,
HEAP'S REGISTERED GAS TONGS, most highly approved of as vastly superior to those in present use. Stocks, Taps, and Dies, together with all tools connected with Gas Engineering.
For Drawings, Testimonials, and prices, apply to the Maker, S. GARSIDE, Stamford St., ASHTON-UNDER-LYNE.

GRANT AND CO.'S
PATENT COMPENSATING GAS-METER,

Which secures accuracy of registration by its maintaining a true water-line under every circumstance, by a simple contrivance which is not liable to get out of repair; requiring little attention, they being self-acting—as the water is again used that is left, after supplying what has been lost by evaporation.

GAS-METER WORKS: EDINBURGH.

ALEXANDER WRIGHT,

GAS ENGINEER, MANUFACTURER OF GAS-METERS, GOVERNORS, AND EVERY DESCRIPTION OF GAS APPARATUS,

55, MILLBANK STREET, WESTMINSTER.

CONSUMERS' METERS at the List Price, with a Liberal Discount to Wholesale Purchasers.

THOMPSON'S BROMINE TEST, £1. 1s.—BROMINE, 3s. per Ounce.

BISULPHURET OF CARBON TEST, £2. 2s.

APPARATUS FOR DETERMINING THE HEATING POWER OF SAMPLES OF COAL AND OTHER DESCRIPTIONS OF FUEL, £5. 5s., INVENTED BY LEWIS THOMPSON, ESQ., M.R.C.S.

REGISTERING PRESSURE GAUGE, Net Price, £8. Glass Shade, 10s. extra.

STATION METERS, PRESSURE GAUGES, PHOTOMETERS, SPECIFIC GRAVITY APPARATUS, &c.

LORD REDESDALE'S "SALE OF GAS BILL" having received the sanction of the Legislature, Gas Companies and Consumers are respectfully informed that ALL Meters made at this Establishment are constructed most carefully to meet the requirements of this Act.

WRIGHT'S COMPENSATING METER possesses peculiar claims on the attention of those who desire to obtain a most simple and thoroughly efficient instrument at a moderate price.

CANNEL and COAL of the best descriptions for making GAS and COKE.
(As per Analyses.)
GAS CANNEL, 17s., 15s. 6d., and 14s. per ton.
GAS COAL, 11s. 6d., 9s. 6d., and 8s. 6d. per ton.
STEAM COAL, 10s., 9s. 6d., and 9s. per ton.
All free on board Vessels in Liverpool.
Handpicked Cannel and Coal about 10 per cent. additional. Concession in prices made for large quantities.
GAS APPARATUS of all descriptions, and on the most approved principles; also Purifying and other materials supplied.
ANALYSES, PLANS, and ESTIMATES, and other information required, and the highest references furnished on application.
CONTRACTS for Materials and Works entered into.
No charge made for Superintending Shipments, Preparing Bills of Lading, or passing Entries.

EMANUEL TURNER and CO.,
EXPORT OFFICES:
34, CASTLE STREET, LIVERPOOL.

NO CHIMNEY WANTED FOR
RICKETS'S PATENT CALORIFERE GAS STOVES,
IN CHURCHES, HALLS, OR SHOPS;
And for Conservatories, or any close apartment, a pipe can be attached to convey away the burnt air.

RICKETS'S CHEAP GAS STOVE,
Price £1. 15s.,
Made of sheet-iron, suitable for heating small Counting-houses, Bed-rooms, Cellars, *&c. &c.*

MANUFACTORY,
AGAR STREET, STRAND, LONDON.
Liberal Discount to Gas Companies, Builders, and the Trade.

FIRE-CLAY RETORTS.
JOHN SWARBRICK,
MANUFACTURER OF PATENT COMPOSITION CLAY RETORTS,
FIRE BRICKS OF EVERY DESCRIPTION, SHAPE, AND SIZE, &c. &c.
HIGHER EANAM, BLACKBURN, LANCASHIRE.

These RETORTS are generally used in the Gas-works of Preston, Accrington, Bury, Heywood, Middleton, Rochdale, Ratcliffe; the Mills of Messrs. Horrocks, Miller, and Co., Preston, &c. &c., and are unequalled in having afforded general satisfaction to those who have given these Retorts a trial.
To meet the increasing demand, the Works at Little Harwood have been greatly enlarged; and Gas Engineers who may favour with an Order may rely with confidence on their being promptly supplied with an article not to be surpassed in finish or durability.

PRICES MODERATE.

LIVESEY FIRE-CLAY WORKS,
NEAR BLACKBURN, LANCASHIRE.
ORLANDO BROTHERS,
MANUFACTURER OF PATENT CLAY RETORTS,
AND EVERY DESCRIPTION OF
TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.
FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

LORD REDESDALE'S SALE OF GAS ACT.
WET AND DRY GAS-METER WORKS,
GREAT PETER STREET, WESTMINSTER.

THOMAS EDGE has the satisfaction to inform those Directors of Gas Companies who have favoured him with their Orders for his Patent Improved Wet Meters—of which he has sent out upwards of 80,000—that they will not require any alteration under the provisions of the Sale of Gas Bill; whereas the Common Meters in use in the United Kingdom which have been proved so susceptible of error in their measurement are required to be taken down and altered at considerable expense.

Thomas Edge begs to state that he is prepared to supply his Patent Meters, which meet the requirements of the Act, to any Company at the present time; and, so soon as arrangements are made in London to have Meters tested and stamped, he will then supply them to Country Gas Companies with the Legal Stamp affixed, ready for use.

WILLIAM PARKINSON AND CO.,

(SUCCESSORS TO THE LATE SAMUEL CROSLEY,)

COTTAGE LANE, CITY ROAD, LONDON, E.C.,

PATENTEES AND MANUFACTURERS OF

GAS-METERS, GOVERNORS, AND OTHER APPARATUS;

ALSO,

METERS FOR MEASURING WATER, &c., &c.

IMPROVED LOW-SPOUTED GAS-METERS,

Which completely meet the requirements of Lord Redesdale's Sale of Gas Act, and are as simple in their construction, satisfactory in working, and as low in price as the well-known Meters which have been made by W. P. and Co., and their predecessor, Mr. Samuel Crosley, during the last forty years, and of which there are about 300,000 now in use.

STATION-METERS AND GOVERNORS

Of all Sizes, of the best Construction, Materials, and Workmanship, supplied on the shortest notice.

There are about 300 Station-Meters at work of their manufacture, of sizes varying from 750 to 60,000 cubic feet per hour, of which the following are some of the principal ones, recently supplied by them to London Gas Companies, viz. :—

2	for	60,000	cubic feet per hour each	to the Chartered Gaslight and Coke Company, Westminster;
1	„	40,000	„ „	Chartered Gaslight and Coke Company, Brick Lane;
2	„	60,000	„ „	London Gaslight Company, Vauxhall;
1	„	60,000	„ „	Commercial Gas Company, Stepney;
1	„	40,000	„ „	Equitable Gas Company, Pimlico;
1	„	40,000	„ „	Phœnix Gaslight Company, Greenwich,

&c. &c. &c.

And they have also supplied large Station-Meters to the Gas Companies at Birmingham, Nottingham, Sheffield, Southampton, Leeds, Newport, Glasgow, Manchester, Dublin, Cork, and all the principal towns in the United Kingdom, as well as many on the Continent, &c., &c.

Their Station Gas-Governors have been adopted by most of the above-named Companies, and have given universal satisfaction.

PRESSURE REGISTERS, EXPERIMENTAL METERS, PHOTOMETERS,

Minute Clocks, Consumers' Gas-Governors, Pressure-Gauges,

STANDARD EXPERIMENTAL GASHOLDERS FOR PROVING METERS, &c.

GEORGE LOWE'S PATENT NAPHTHA BOXES AND MOTIVE-POWER METERS,

WITH MACHINERY FOR WEIGHTS TO ASSIST THE SUPPLY OF GAS WHERE THE PRESSURE IS LOW.

SPECIFIC GRAVITY APPARATUS, RAIN GAUGES, &c.

JAMES OAKES and CO.,

ALFRETON IRON WORKS, DERBYSHIRE,

AND

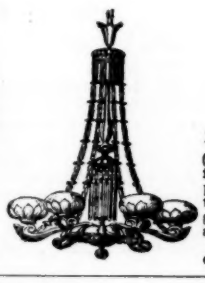
WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,

Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water Works, including best cold-blast Iron Retorts, Socket and Flange Pipes of all sizes, Bends, Branches, Syphons, Lamp Columns of various patterns, &c.

N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.

CHARLES HORSLEY, Agent.

C. H. is prepared to carry out the warming and ventilation of public buildings, &c.; also civil engineering in general.



F. & C. OSLER,

45, OXFORD STREET, LONDON;

Manufactory—Broad Street, Birmingham—Established 1807,

MANUFACTURERS OF GLASS CHANDELIERS, GLASS LUSTRES, TABLE GLASS, &c. &c.

ELEGANT CRYSTAL GLASS CHANDELIERS, for GAS, from £4 upwards (Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable for DRAWING-ROOMS and BALL-ROOMS. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.

THEATRES, CONCERT, ASSEMBLY, AND BALL ROOMS LIGHTED BY ESTIMATE ON THE LOWEST TERMS.

BOULTON'S PATENT

DRY GAS-METERS,

Of which upwards of 24,000 are at present in use, having gained for themselves an unparalleled patronage from all the principal Gas Companies and Consumers, on account of their unerring registration and the superior workmanship and materials used in their construction, enables the Patentee to sell them now at competitive prices with those of other makers.

Every description of Improved Wet or Patent Dry Meters and Gas Apparatus manufactured by

JOSEPH BOULTON

28, BAGNIGGE WELLS ROAD, CLERKENWELL.

THE UNIVERSAL

GAS-BURNERS REGULATOR,

(GEYELIN'S PATENT,)

The only one in the world by which the flame from Argand, Fish-tail, and all other Burners remain invariable under all variations of pressure, and the cost of each light is less than one farthing per hour.

Can be fixed horizontal, close to, or distant from, the Burner; is ornamental, simple in construction, consisting of a double chamber, the inner perforated, covered with a diaphragm giving action to a spherical valve.

PRICE 3s. EACH.

Can at all times be seen tested at the Manufacturer's,

JOSEPH BOULTON

28, BAGNIGGE WELLS ROAD.

ESSON'S PATENT
COMPENSATING GAS-METER

Is guaranteed correct within the meaning of the "Sale of Gas Act." Manufactured only by WILLIAM COWAN, Buccleuch Street Works, EDINBURGH; and St. Mary's Gate, MANCHESTER.—Established 1827.

JAMES MEACOCK,
PATENT DRY AND WET GAS-METER MANUFACTURER,
7, SNOW HILL, AND 16, WEST STREET, LONDON.

ESTABLISHED 1836.

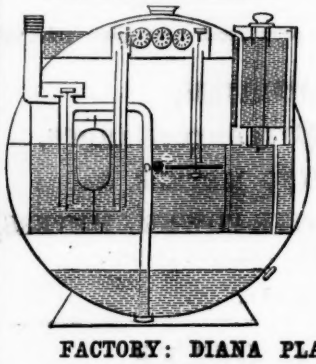
JAMES MEACOCK begs to thank Gas Companies and the Trade generally for the very liberal support awarded him in his Patent Dry Gas-Meter; his Improvement in connecting the Diaphragm between Metal Rings, cemented and screwed to the Tin Frames, being pronounced by Gas Engineers to be the most perfect improvement to the Dry Meter since its introduction.

J. M. invites attention to his Improvements in **EXPERIMENTAL WET GAS-METERS**, by which he renders impossible any Leakage from the Stuffing-Box.

These METERS are GUARANTEED to meet all the REQUIREMENTS of the SALE OF GAS ACT.

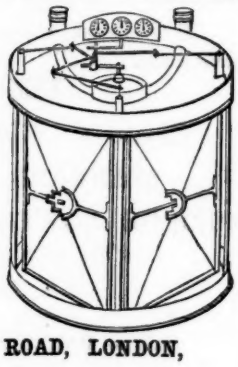
GOVERNORS, STATION-METERS. PHOTOMETERS,
EXPERIMENTAL TESTING GASHOLDERS, HIGH-PRESSURE GAUGES,
AND ALL APPARATUS IN USE AT THE GAS MANUFACTORY.

PATENT WET METER.



N. DEFRIES,
CONSULTING GAS ENGINEER,
Inventor and Patentee
OF
WET GAS-METERS,
WITH SELF-ADJUSTING WATER-LINE;
DRY METERS,
GAS-HEATING BATHS, OVENS, STOVES,
GAS FIRES with INDESTRUCTIBLE FUEL,
&c., &c.

PATENT DRY METER.



FACTORY: DIANA PLACE, FITZROY SQUARE. OFFICE: 406, EUSTON ROAD, LONDON,
Eight Doors from Factory.

Attempts having been made to construct Self-Supplying Apparatus to Wet Gas-Meters upon the Bird Fountain principle,—which, although unerring to supply water in the open atmosphere, has not wholly succeeded so as to be relied upon when enclosed in a Gas-tight Meter Case,—N. DEFRIES begs leave most respectfully to acquaint Gas Companies, and the Public in general, that he has constructed his PATENT WET GAS-METER upon a method entirely different, being founded on the well-known principle of the self-acting supply of the Oil Lamp, which has never been applied for the adjustment of the Meter Water-Line before, and which, by the admission of external air to a chamber sealed from Gas, will never fail to faithfully perform its required function. They are of the very best materials and workmanship, will stand more pressure than is required as the test for soundness by the New Act, are guaranteed to prevent surreptitious burning without detection, and will be kept in repair free of charge for seven years.

N. DEFRIES'S CELEBRATED DRY METERS,

of which more than 80,000 are in use in Palaces, Churches, Chapels, Royal Dockyards, Club Houses, Public Offices, and other Buildings throughout the Empire and Continent, which have done so much in checking surreptitious burning, and simplified the fitting up of Gas.

To remove any doubt of accuracy of measurement his Meter for 1500 lights, in use upwards of ten years at the Royal Italian Opera, until that Building was destroyed by Fire, was long afterwards dug out of the burnt ruins, then tested by the Chartered Gas Company in the presence of George Lowe, Esq., F.R.S., and other Chief Officers, and found inflexibly correct. Also, on the 9th of June, 1858, at the Western Gas-Works, his Meter for 150 lights, after considerable use, was doubted, and subjected to the most variable tests—from the full lighting to a single Jet—and in each case, as in other instances, accuracy was finely indicated.

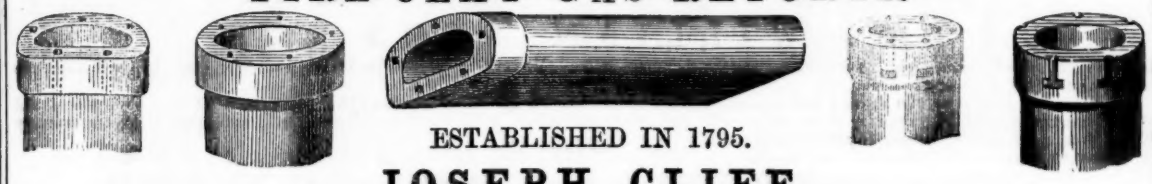
As to durability, his two large Meters at the Thames Tunnel have been in use night and day for upwards of twelve years—one continuation of dark hours—subjected to the wear and tear of seventy-five years as compared with the ordinary business hours of using Gas above ground.

LORD REDESDALE'S SALE OF GAS BILL.

All Meters constructed by N. DEFRIES are guaranteed to pass the Provisions of the Standard.

No alteration has been necessary in the Meters he continues to supply to the Chartered, Imperial, City of London, Equitable, and other large Companies, his accustomed range of 1 per cent. over and under meeting all the desired requirements; whereas, by the New Act, a greater departure from accuracy—viz., 2 per cent. fast to 3 per cent. slow—is permitted.

FIRE-CLAY GAS RETORTS.



ESTABLISHED IN 1795.

JOSEPH CLIFF,

WORTLEY FIRE-BRICK WORKS, near LEEDS.

THESE RETORTS are unrivalled in excellence, being the BEST FINISHED INTERNALLY, and THE MOST CORRECT IN FORM, of any in the Kingdom. From the peculiar composition used in working up the face of the material, they are rendered unusually smooth, close, and FREE FROM SURFACE CRACKS, thus, in a great measure, preventing leakage and the adhesion of carbon to their interior surface.

To meet the yearly increasing demand of UPWARDS OF THIRTY SEASONS and to carry out the late improvements in the manufacture, the Premises have been re-erected and much enlarged, and Engineers may rely WITH CONFIDENCE on their orders being completed with a greater regard to despatch than by any other House.

THE WORKS ARE WELL SITUATED

For EXPORT from the Ports of { LONDON, LIVERPOOL, HULL, MIDDLESBRO', HARTLEPOOL, and STOCKTON.

FIRE-BRICKS, LUMPS, GUARDS, TILES, AND CLAY OF THE SAME QUALITY.

M. B. NEWTON, London Agent, No. 4, Wharf, King's Cross Goods Station.

PADDON and FORD respectfully invite the attention of Gas Companies and Managers to their PATENT STREET LAMP REGULATOR, which ensures any required consumption.

By its use a great saving is effected, and the item of "Unaccounted-for Gas" considerably decreased.

PADDON and FORD, Patent GAS-METER AND APPARATUS WORKS, GRAY'S-INN-ROAD, LONDON,

Manufacturers of WET and DRY GAS METERS, STATION METERS, GOVERNORS, EXPERIMENTAL APPARATUS, LANTERNS, &c. &c.

Contractors for the erection or alteration of Gas-Works; and every description of Apparatus required in Gas-Works supplied.

GEORGE CUTLER, Gasholder MAKER,

No. 8, WENLOCK-ROAD, CITY-ROAD, LONDON.

Contracts for Tanks, Gasholders, Roofs, Purifiers, and all descriptions of Gas Apparatus executed on the most reasonable terms. Improved Slide Valves, Steam, and Range Boilers, and Smiths' Work, of the best materials and workmanship.

WILLIAM CLIBRAN'S Patent MERCURIAL GAS-GOVERNOR FOR STREET LAMPS.

W. C. begs respectfully to call the attention of Gas Companies to his PATENT GAS-GOVERNOR for STREET LAMPS, upwards of 3000 of which are now in use on Public Lamps. By their use any given quantity of Gas per hour may be consumed with the tap full open whatever the increase of pressure may be, thus preventing a great waste of Gas in many of the Lamps, and securing to the public an uniform light. Prices, 3s. 4d., 3s. 6d., and 3s. 8d. each.

Governors kept in stock from three-eighths of an inch to four inches bore.

Samples and Testimonials forwarded on application to WILLIAM CLIBRAN, 43, Todd Street, MANCHESTER

BENJAMIN GIBBONS, Jun., DEEPDALE FIRE-CLAY & BRICK WORKS,

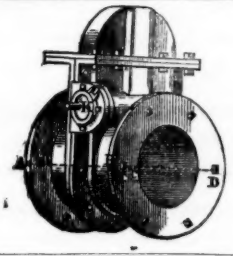
Near DUDLEY,

Manufacturer of every description of Fire-Bricks, Lumps, Quarries, Shields, Flue Covers, &c., to any size or shape required.

FIRE-CLAY RETORTS, TO MODEL OR DRAWING.

B. G. begs to call the attention of Gas Companies to his Fire-Clay Retorts, which have been used with great satisfaction in some of the largest Gas-Works in the Metropolis and many Provincial Towns in England.

References given, if required.



BRYAN DONKIN & CO.

keep always on stock their

IMPROVED GAS VALVES

from 2 inches to 18 inches, price 11s. 6d. to 13s. 6d. per inch diameter

List of prices, with full dimensions of all sizes up to 27 inches, to be had on application.

These Valves are all proved to 30 lbs. on the square inch before leaving the works.

BRYAN DONKIN & CO.,

ENGINEERS,

NEAR GRANGE ROAD, BERMONDSEY.

BIRTLEY IRON WORKS, CHESTER-LE-STREET, DURHAM.

Manufactory for every description of Casting and Machinery for Gas Works and Water Works.

Warehouse in London for Cast-iron Pipes and Connections of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

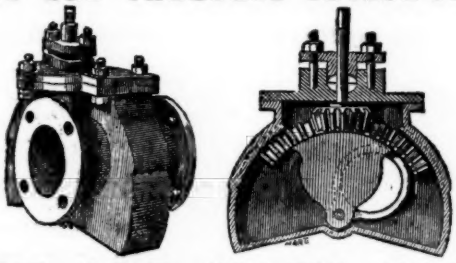
Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

HARRIS and PEARSON PROPRIETORS OF BEST CLASS-HOUSE POT AND CRUCIBLE CLAY. MANUFACTURERS OF **FIRE BRICKS GAS RETORTS &C.**

AMBLECOTE FIRE CLAY AND BRICK WORKS, STOURBRIDGE.

Late in the occupation of I. and W. King. Originally J. Pidcock, Esq.

BEST AND CHEAPEST SLUICE-COCK.



BROWN AND MAY'S PATENT.

Above 3-inch diameter, price 10s. per inch. Brass face, 6d. per inch extra.

Can be taken to pieces without being removed from the line of Piping.

NORTH WILTS FOUNDRY, DEVIZES.

Wholesale Agents, Messrs. S. and E. RANSOME, 31, Essex Street, Strand, E.C., Where a Sample may be seen.

WILLIAM INGHAM AND SONS,

WORTLEY FIRE-BRICK AND RETORT WORKS,

Near

Leeds.

W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY,

beg to call especial attention to their RETORTS, which have for many seasons proved to be unsurpassed in quality by any in the Kingdom, their FREEDOM FROM CRACKS and the ADHESION OF CARBON rendering them worthy the attention of all parties interested in the making of Gas.

The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

London Agents: CHADWICK and AKEROYD, Willington Stone Wharf, Regent's Park Basin.

A large stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all sizes kept in London at CHRISTIE & CO.—Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*

LORD REDESDALE'S SALE OF GAS ACT.

WILLIAM SUGG

Begs to inform Gas Companies and his Customers generally that henceforth all Meters sent out from his Works, both Water and Dry, will meet the requirements of the above Act.

To those Gas Companies who desire a Self-Adjusting Meter, he recommends his "COMPENSATING WATER METER" as a simple and efficient instrument, combining accuracy of registration with protection against fraud, while the slight difference in form between it and the ordinary Water Meter renders the alteration of existing stock a matter of comparative ease and moderate expense.

Those who approve of the non-compensating Meters will find his "WATER-BOX METER" all that can be desired.

GAS-METER and APPARATUS WORKS: 19 and 20, MARSHAM STREET, WESTMINSTER.

SALE OF GAS ACT.

MESSRS. CROLL, RAIT, AND CO.,

Manufacturers of Croll's Patent Improved

DRY GAS-METER,

being informed that several Gas Companies are under the impression that Dry Meters will not be allowed by the above Act, beg to say that such is not the case, inasmuch as the Act embraces "every kind of machine used for measuring gas," and provides for the testing of the same, in its 13th clause.

Speaking for themselves, and of the Meters manufactured by them, C., R., and Co. have the gratification of knowing that not one single Meter out of the large number they have sold, will, when tested by an Inspector, be rejected; and, consequently, that neither Gas Companies nor Consumers who have these Meters in use will be put to one farthing expense for alterations.

C., R., and Co. always adopted the unit of measure provided for by the 2nd clause of the Act, and have never allowed themselves a greater latitude than 1 per cent. either fast or slow, and they intend to adhere to these limits, notwithstanding that the Act allows 2 per cent. fast and 3 per cent. slow.

C., R., and Co.'s Meters register most correctly all the gas passed through them, whether it be the smallest quantity or the full complement for which the Meters are made; and *they are prepared to give written guarantees to Purchasers that the Meters shall, when tested by an Inspector on his appointment under the Act, be approved of by him as correct. In the event of such not being the case, the Purchaser to be entitled to return the Meters to C., R., and Co., and claim from them their cost, together with any expenses incurred by their rejection.*

Further, C., R., and Co. undertake, during a period of five years from the date of purchase, to put into good order, free of charge to the Purchaser, any Meters of their manufacture which may become defective.

CROLL, RAIT, AND CO.,

DRY GAS-METER MANUFACTURERS,

CANAL BRIDGE, KINGSLAND ROAD, N.E.,

are prepared to supply

STANDARD CUBIC FOOT MEASURES,

of the Capacity required by the 2nd Clause of the Act,

as well as Gasholders correctly graduated thereby.

STATION-METERS, GOVERNORS, PRESSURE-REGISTERS, AND OTHER GAS APPARATUS SUPPLIED.

Particulars given upon application.

D. HULETT and CO., 55 and 56, HIGH HOLBORN, LONDON,

PATENTEES and MANUFACTURERS of the ONLY GOOD MERCURIAL GAS REGULATOR,

invite the attention of Gas Companies and the Trade generally to their Improved GAS-METERS, which they warrant equal to any in Quality, Workmanship, and Simplicity of Construction, and the only Meters from which Gas cannot be obtained without being duly registered.

MANUFACTURERS OF

GAS CHANDELIERS, GLASS LUSTRES, HALL LANTERNS, VESTIBULES, BRACKETS, PENDANTS;

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